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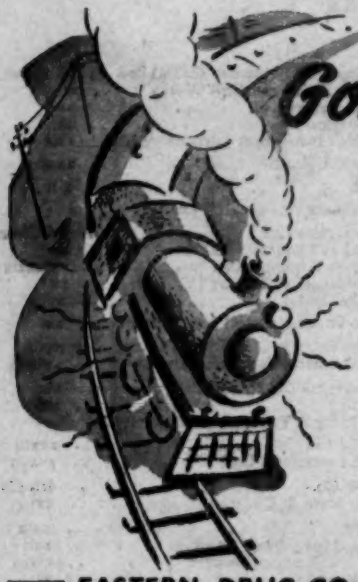

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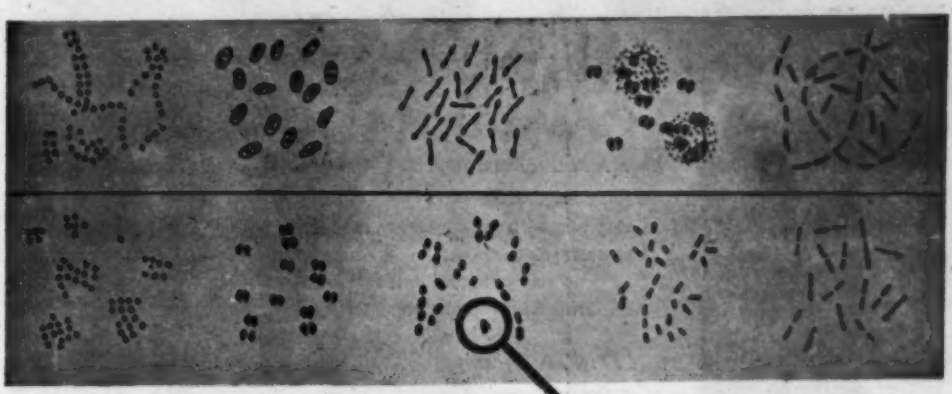

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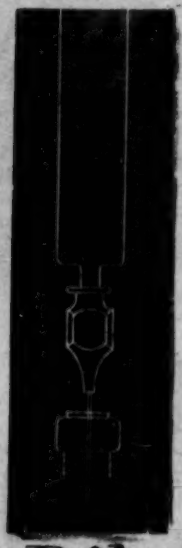

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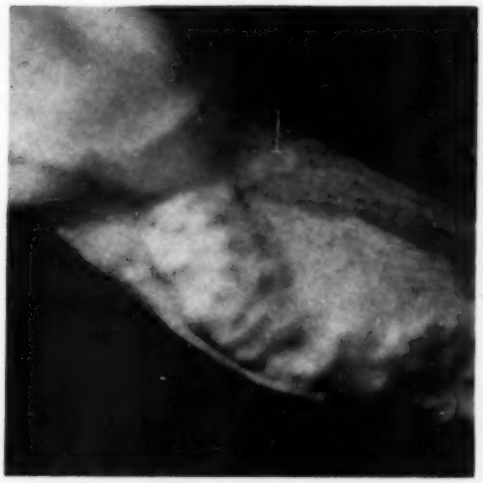

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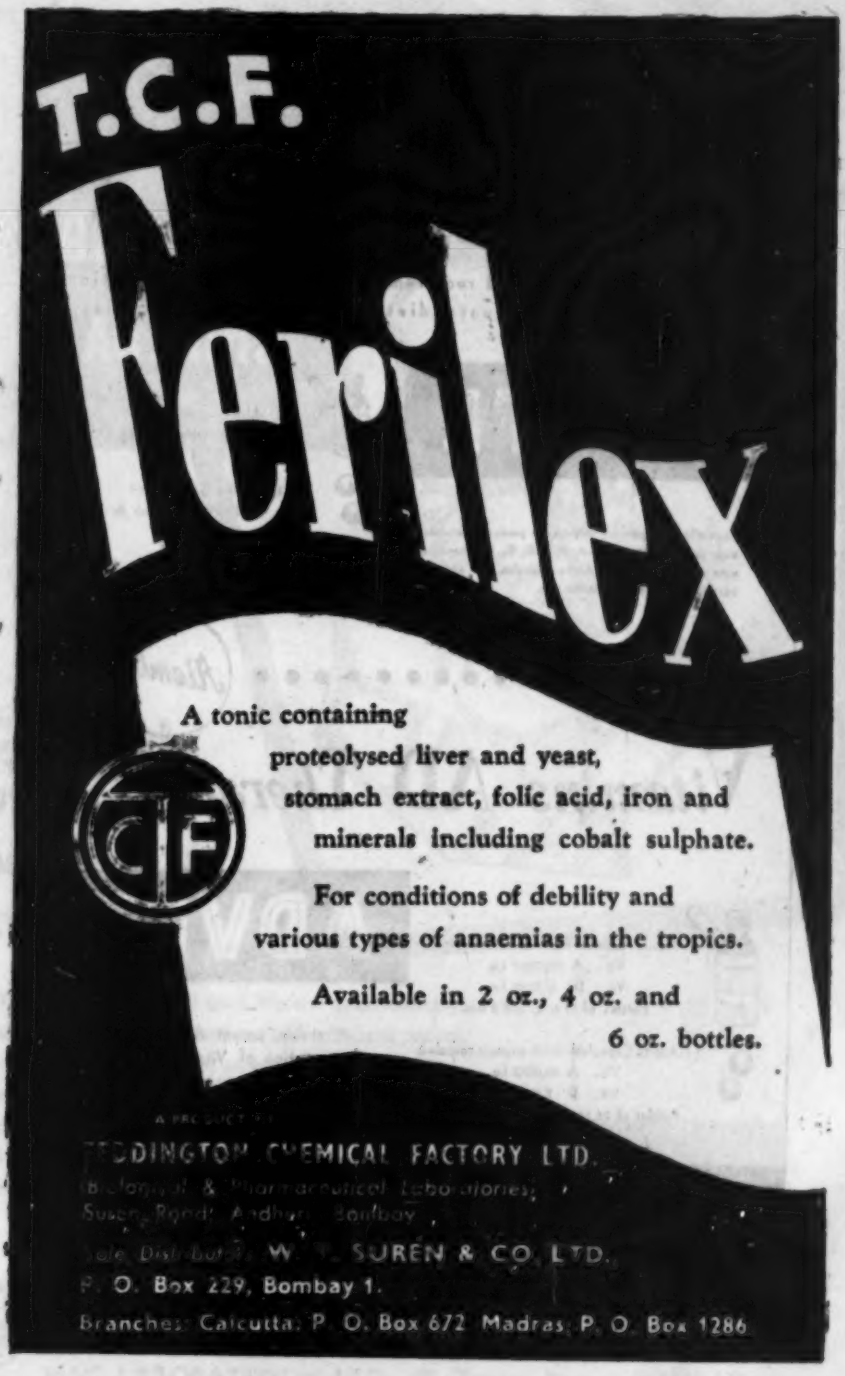
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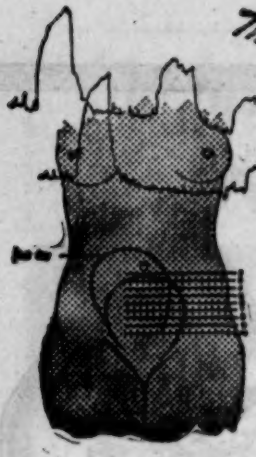

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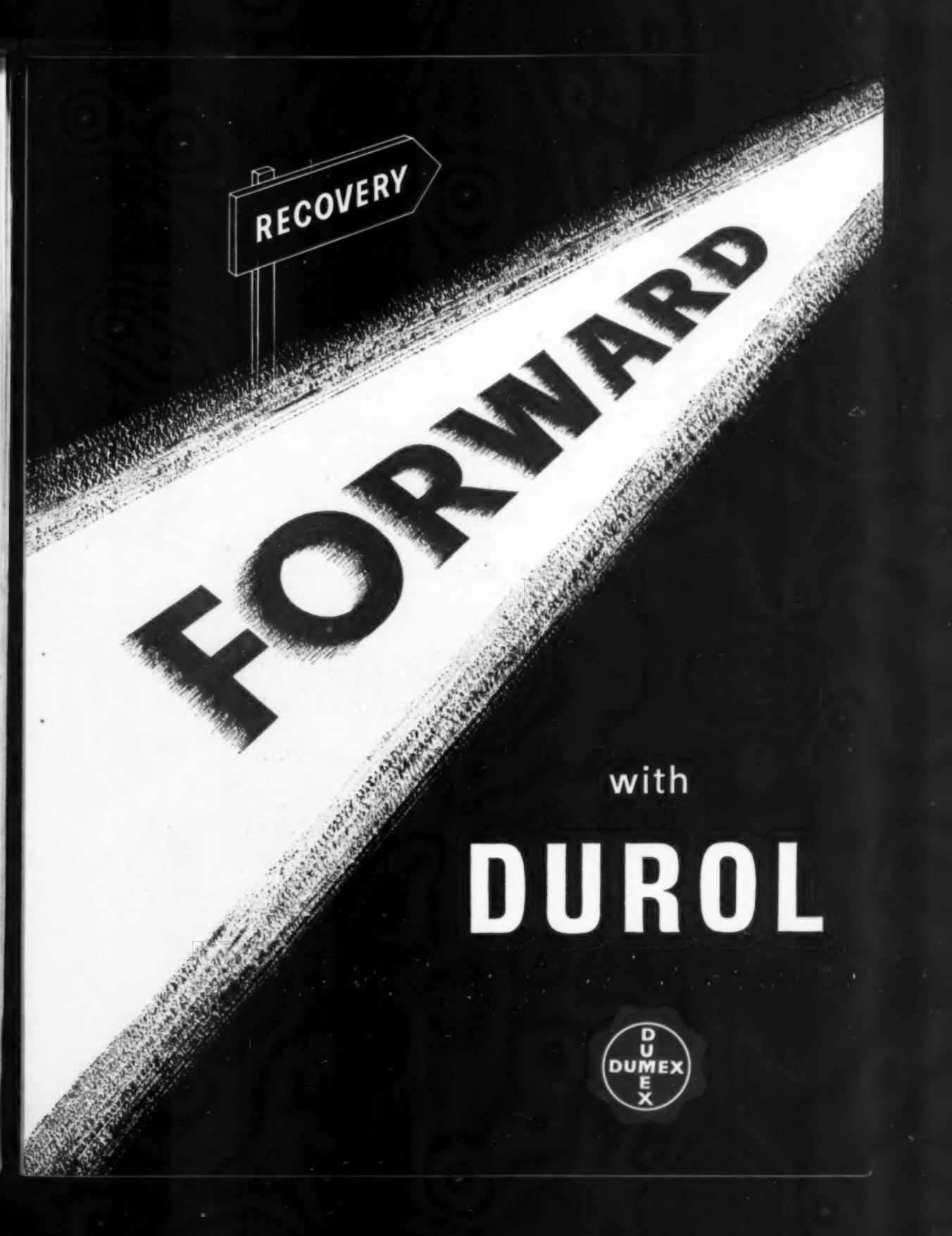
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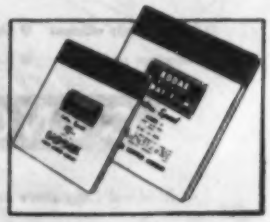

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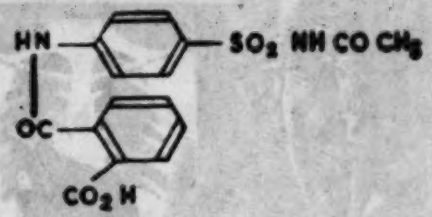

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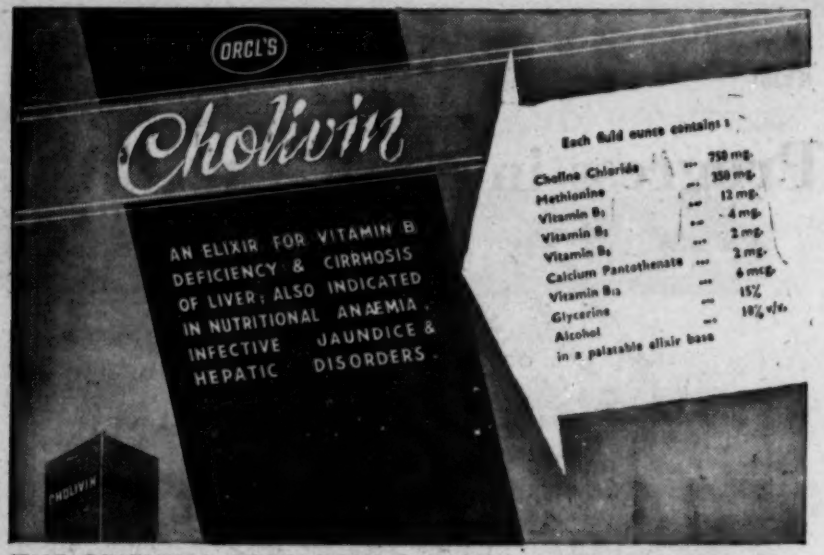
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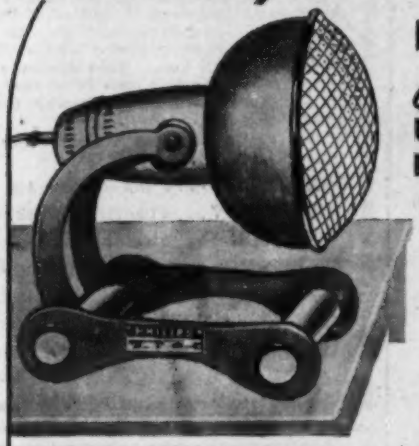

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ORIGINAL ARTICLES

CAUSE OF STILLBIRTHS AND NEONATAL DEATHS

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AND

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Visakhapatnam

During the last two decades an appreciable reduction in maternal mortality has been observed. This is attributable to better obstetric care of the expectant mother in the antenatal, intrapartum and postpartum periods and to the generous use of antibiotics and blood transfusion whenever indicated. A corresponding reduction in infant mortality has not been achieved although a reduction in mortality rate from 100 to 30 per thousand live births is recorded in America and Europe from 1900 to the present time. What has been achieved in other countries by way of minimising infantile mortality rate is yet to be realised in the South East Asian countries including India.

In Table 1 is recorded comparative incidence of stillbirths and neonatal deaths of some countries.

TABLE 1—SHOWING COMPARATIVE INCIDENCE OF STILLBIRTHS AND NEONATAL DEATHS

Country and period	*Stillbirths per 1000 total births*	*Neonatal deaths per 1000 live births*
England and Wales (1947) ...	24	22·7
N. M. Wadia Hospital, Bombay (1943) ...	57	58
Bai Mothl Bai Hospital, Bombay (1943) ...	83	78
*King George Hospital, Visakhapatnam (1950-'52) ...	73·3	41·6

*Authors' series.

It is universally agreed that the stillbirth rate is frequent in the economically low income group and figures quoted by Baird (1945) from Aberdeen indicated in Table 2 are in favour of this.

TABLE 2—SHOWING COMPARATIVE INCIDENCE OF STILLBIRTHS AND NEONATAL DEATHS IN THE DIFFERENT ECONOMIC GROUPS

Class of people	*Stillbirths per thousand*	*Neonatal deaths per thousand*
Nursing home ...	25·4	13·6
Booked hospital cases ...	30·4	34
Specialist group ...	10	7·9

Several factors account for the high incidence of stillbirths and neonatal deaths in the low income group. Poor health, and nutrition, stress and strain of the mother till the time of delivery are a few of the many factors responsible for the stillbirths in the low income group. More food and rest lowered the stillbirth rate after the famine of Rotterdam in 1945. Vitamin deficiency, anæmia and toxæmia of pregnancy in the mother contribute to prematurity and stillbirths. The remarkable reduction to 19 per thousand live births of infant mortality in Denmark in 1948 is chiefly due to the increased supplies of iron, nutritious food, calcium and vitamins to the expectant mothers.

Prematurity is known to account for 50 per cent of neonatal deaths. Over 60 per cent of deaths in premature infants occur within 48 hours of neonatal period. These infants are greatly susceptible to infections.

A small but significant number of stillbirths and neonatal deaths are result of diseases in the mother such as tuberculosis, syphilis, threatened failure of the heart, Rh incompatibility, etc. A considerable number of infant deaths are due to the abnormal location of the placenta, prolapse and knots of the umbilical cord, abnormal presentations of the fœtus, prolonged labour, rupture of the uterus, obstetric manœuvres and analgesics.

Clear and accurate perceptions of the cause of fœtal and neonatal deaths are only possible by routine autopsy examination of these infants and the knowledge so obtained when reviewed on the retrospect in correlation with the obstetric and clinical findings of the mother and infant is bound to promote in the reduction of infant mortality. While reviewing the literature on infant mortality with reference to India we were struck with the paucity of reports on clinicopathological investigation into the cause of stillbirths and neonatal deaths. This prompted us to carry out a clinicopathological study on stillbirths ond neonatal deaths.

Methods and Material

From November 1950 to March 1952, 162 autopsies were conducted by us on stillbirths and neonatal deaths. Fœtal weight and length were recorded in each case. Maturity of the fœtus was assessed by the presence or absence of ossific centres, birth weight, length and in case of the male infants, the location of testes was considered. Infants were grouped as premature when their birth weight was below 5 lbs. Detailed gross and microscopic study of all organs was made. In case of macerated fœtuses where the organs were not suitable for histological study by hæmatoxylin and eosin staining method, sections stained by Levaditi's stain were screened for spirochætes. In 60 per cent of the autopsies concurrent gross and microscopic study of the corresponding placentæ was possible. Particular care was exercised to exclude erythroblastosis fœtalis from a careful gross and histological study of organs. Where microscopic findings were equivocal the parents were Rh typed against Rh C, D, and E sera*.

Findings

Excluding 2, the mothers of the infants autopsied belonged to economically low income group. They were classified according to hæmoglobin content of blood.

Table 3—Mothers Classified According to Their Hæmoglobin Content

Percentage of Hæmoglobin	Below 30	30-40	41-50	51-60	61-70	71-80	90-100
Number in each group	30	8	16	82	19	6	1

Table 4—Showing Age Groups of the Mothers

Age in Years	13-14	18-20	21-30	31-40	Unknown
Number in each group	6	53	82	20	1

Table 5—Showing the Parity of the Mothers

Parity	P 1	2	3	A 4	5	R 6	7	I 8	9	T 10	11	V 12	13
Number of cases	50	26	26	15	8	18	5	3	7	1	1	1	1

Table 6—Showing Analysis of Stillbirths and Neonatal Deaths

Neonatal deaths	...	...	56
Macerated	38	Stillbirths	106
Intrauterine deaths	28		
Intrapartum deaths	40		

76 of the 162 autopsied were premature giving an autopsy percentage incidence of 47.

* Rh typing sera kindly supplied by Dr. Mourant.

Table 7—Showing Prematurity Responsible for Neonatal Deaths and Stillbirths

Nature of Death			Number premature
Neonatal	...	...	24
Macerated	27	Stillbirths	52
Intrauterine death	11		
Intrapartum death	14		
		Total:	76

Table 8—Showing Records of Parity of Mothers in Relation to Prematurity Associated with Stillbirths and Neonatal Deaths

	P 1	2	3	A 4	5	R 6	I 7	8	T 9	10	V 11	12
Neonatal deaths	7	7	3	1	1	1	2	0	2	0	0	0
Macerated	7	3	2	4	0	6	1	1	1	0	1	1
Intrauterine deaths	4	0	3	0	0	3	0	0	1	0	0	0
Intrapartum deaths	4	2	3	0	1	2	0	1	0	0	0	0
Total:	22	12	11	5	2	12	3	2	4	0	1	1

It is observed that a third of neonatal deaths and stillbirths amongst the premature were encountered in primipara.

Table 9—Showing Clinicopathological Classification of Death in Stillbirths and Neonatal Deaths Autopsied.

S. No.	Cause of death	Total	Neonatal deaths	Stillbirths: Macerated	Intrauterine	Intrapartum	Percentage
1.	Congenital malformations ...	14	5	2	3	4	8·5
2.	Pneumonia ...	18	15	—	—	3	11
3.	Atelectasis ...	3	3	—	—	—	2
4.	Asphyxia ...	46	5	5	10	26	29
5.	Subdural hæmorrhage ...	9	5	—	2	2	5·5
6.	Subarchnoid hæmorrhage ...	1	—	1	—	—	0·6
7.	Intraventricular hæmorrhage ...	2	1	1	—	—	1·2
8.	Adrenal hæmorrhage ...	5	3	—	2	—	3
9.	Renal vein thrombosis ...	5	5	—	—	—	3
10.	Septicæmia ...	1	0	—	—	1	0·6
11.	Gastro-enteritis	9	9	—	—	—	5·5
12.	Toxæmia of pregnancy ...	20	2	13	4	1	12
13.	Accidental hæmorrhage ...	4	—	2	1	1	2·4
14.	Placenta prævia	2	2	—	—	—	1·2
15.	Congenital syphilis ...	5	1	4	—	—	3
16.	Fœtal ascites	1	—	—	—	1	0·6
17.	Fœtal hydrops	1	—	—	1	—	0·6
18.	Advanced decomposition suitable for study ...	5	—	3	2	—	3
19.	Unknown ...	11	—	8	2	1	6·6
	Total:	162	56	39	27	40	99·3

Detailed descriptions of the congenital malformations encountered were recorded by Ratnavati and Reddy (1952a). In Table 10 is summarised the congenital malformations observed.

TABLE 10—SHOWING SUMMARY OF CONGENITAL MALFORMATIONS

S. No.	Sex	Term	Nature of death: Still-birth	Nature of death: Neo-natal	Nature of Anomaly
1.	Male	Mature		Sur-vived 1 day	Atresia œsophagus
2.	Male	Pre-mature	Still-birth		Atresia œsophagus
3.	Male	Mature		Sur-vived 15 mts.	Atresia œsophagus complicated by meconium peri-tonitis
4.	Female	Mature	Still-birth		Multiple cysts liver & kidneys asso-ciated with fœtal hydrops
5.	Female	Pre-mature	Mace-rated		Polydactylism
6.	Inde-finite	Pre-mature	Still-birth		Exomphalos
7.	Male	Pre-mature	Still-birth		Diaphragmatic her-nia left with um-bilical hernia
8.	Female	Mature		Sur-vived 15 mts.	Diaphragmatic her-nia right side
9.	Female	Pre-mature	Still-birth		Multiple congenital arthritic rigidi-ties, cystic kid-neys & bilateral club hands & feet
10.	Male	Pre-mature	Still-birth		Multiple congenital arthritic rigidi-ties with bilateral club feet
11.	Male	Mature		Sur-vived 10 mts.	Blateral polycystic kidneys, anence-phalus & poly-dactylism
12.	Female	Mature	Perfo-rated		Hydrocephalus with spina bifida
13.	Male	Mature	Still-birth		Anencephalus
14.	Male	Mature		Sur-vived 1½ days	Arachnoidal cyst brain

Pulmonary causes of death accounted for 13 per cent of 162 stillbirths and neonatal deaths. Nearly 30 per cent of neonatal deaths were due to one or the other forms of pneumonia. A detailed report of the pathology and pathogenesis of pneumonia in the newborn has been communicated for publication. In Table 11 is recorded the summary of findings in deaths due to pulmonary causes.

TABLE 11—SHOWING NATURE OF PULMONARY LESIONS AND THE PERIODS INFANTS SURVIVED

S. No.	Morbid anatomical lesion	Period infant survived	Weight in lbs.
1.	Pulmonary hyaline membrane	1 hour	4½
2.	Atelectasis ...	2 hours	3½
3.	Atelectasis ...	2 days	4
4.	Atelectasis ...	4 days	5 1/5
5.	Massive pulmonary hæmorrhage	1 day	2½
6.	Massive pulmonary hæmorrhage	3 hours	3½
7.	Hæmorrhagic bronchopneumonia	1 hour	2
8.	Hæmorrhagic bronchopneumonia	2 days	4½
9.	Hæmorrhagic bronchopneumonia	4 days	6½
10.	Hæmorrhagic bronchopneumonia	5 days	6½
11.	Bronchopneumonia ...	7 days	6½
12.	Bronchopneumonia—aspirated	7 hours	2½
13.	Bronchopneumonia—aspirated	12 days	2
14.	Unresolved bronchopneumonia	5 days	5
15.	Lobar pneumonia ...	10 days	6½
16.	Interstitial pneumonia ...	3 hours	5
17.	Interstitial pneumonia ...	3 days	5½
18.	Interstitial pneumonia ...	14 days	4½

TABLE 12—SHOWING PULMONARY CAUSES OF STILLBIRTHS

S. No.	Morbid anatomical lesion
1.	Massive pulmonary hæmorrhages
2.	Vernix squames
3.	Vernix squames
4.	Bronchopenumonia

29 per cent of 162 stillbirths and neonatal deaths were accounted by asphyxia. The case reports and the factors responsible for the asphyxial condition in each have been reported (Ratnavati and Reddy, 1953). In Table 13 is recorded the extrinsic causes of anoxia in 46 deaths due to asphyxia.

TABLE 13—SHOWING OBSTETRIC COMPLICATIONS RESPONSIBLE FOR FŒTAL ASPHYXIA

S. No.	Probable cause of asphyxia	Neo-natal	Ante-mortem	Intra-partum	Total
1.	No cause found	1	1	9	11
2.	Subdural hæmorrhage	2	—	3	5
3.	Toxæmia of pregnancy	1	—	4	5
4.	Accidental hæmorrhage	—	—	2	2
5.	Placenta prævia	1	—	4	5
6.	Prolonged labour	—	—	3	3
7.	Rupture uterus	—	—	2	2
8.	Prolapse cord	—	—	3	3
9.	Cord round the neck	—	—	4	4
10.	Breech	—	—	1	1
11.	Transverse lie	—	—	3	3
12.	Foiled forceps	—	—	2	2
	TOTAL:	5	1	40	46

Two deaths from asphyxia with intra-abdominal hæmorrhage and multiple subcapsular hæmatoma of the liver in one and laceration of the liver in the other were observed.

Autopsy findings in one case of renal infarction and 3 cases of renal vein thrombosis—2 of which were associated with gastroenteritis, were reported by Reddy and Ratnavati (1952b).

Maternal syphilis was responsible for one neonatal death (syphilitic epiphysitis 1 and 5 stillbirths only). In only 5 macerated fœtuses out of 38, histological evidence of syphilis was observed. Detailed report of the findings of maternal syphilis as cause of stillbirths and neonatal deaths has been communicated.

In 68 of the 162 stillbirths and neonatal deaths one or the other maternal complication indicated in Table 14 was responsible for the death of the infant.

TABLE 14—SHOWING MATERNAL COMPLICATIONS RESPONSIBLE FOR STILLBIRTHS AND NEONATAL DEATHS

Nature of birth	*Eclampsia*	*Pre-eclampsia*	*Accidental hæmorrhage*	*Placenta prævia*	*Prolonged labour*	*Rupture uterus*	*Heart failure*	*Syphilis*	*Total*
Macerated Stillbirth	1	11	0	1	0	0	0	5	18
Intrauterine	5	6	2	3	3	1	0	0	20
Intrapartum	1	3	1	3	1	1	1	0	11
Neonatal	4	4	1	4	0	0	0	1	14
TOTAL:	11	24	4	11	4	2	1	6	63

TABLE 15—SHOWING CAUSE OF DEATH IN THE PREMATURE NECROPSIED

No anatomical cause found	8
Toxæmia of pregnancy	17
Asphyxia	10
Pneumonia	10
Congenital malformations	7
Congenital syphilis	5
Intracranial hæmorrhage	11
Miscellaneous causes	8
TOTAL: ...	76

SUMMARY AND CONCLUSIONS

1. The causes of 162 stillbirths and neonatal deaths are tabulated.

2. 47 per cent of the 162 infants necropsied were premature. This study revealed the fact that prematurity is not solely responsible for stillbirthhs and neonatal deaths. Study of the obstetric history of the mother and clinical and autopsy findings of the deceased infant has disclosed that in only 8 cases no cause of death was found.

3. Maternal complications like toxæmia of pregnancy, accidental hæmorrhage, placenta prævia, prolonged labour, rupture of the uterus, maternal syphilis, etc., accounted for 38 per cent of the fœtal and neonatal mortality. In only 9 cases obstetric manœuvres like version, breech extraction, application of axis traction forceps could be reasonably blamed for fœtal death. Antenatal care, adequate supply of food and vitamins and efficient and readily available obstetric care are bound to minimise the fœtal loss due to maternal complications and obstetric manœuvres.

4. Asphyxia, pneumonias, intracranial, renal and adrenal hæmorrhages, congenital malformations, maternal syphilis, etc., in the order of frequency were responsible for stillbirths and neonatal deaths.

5. Two cases of hydrops fœtalis unassociated with erythroblastosis were observed and the prognosis in these cases of future pregnancies is not gloomy.

6. Histological examination of the organs only enabled to recognise renal vein thrombosis, pulmonary hyaline membrane, vernix squames, maternal syphilis, etc., as causes of death in some infants.

7. This study confirms the views of others that a careful study of obstetric data, and a thorough searching autopsy of stillbirths and neonatal deaths is bound to disclose the causes of death which on retrospect will help the obstetrician to prevent infant loss in future.

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A preliminary trial of terramycin in a small number of cases of cholera was reported by us in a previous communication (Das *et al*, 1951). The vibriocidal action of the drug was a noticeable feature. It was observed that a high percentage of stools which were initially vibrio-positive were sterilized after twenty-four hours. In spite of this vibriocidal action there was

*Deceased since presentation of this paper—ED., *J. Indian M. A.*

no significant reduction of mortality in cases so treated as compared with controls. It was however felt that the therapeutic efficacy of a vibriocidal drug in an acute disease like cholera should be assessed after it had been administered early in the course of the disease. A further investigation with earlier cases was considered desirable. With this object in view, ambulances were sent out on call, with a medical man and the drug, so that treatment could be started early in the course of the disease and even before the patient was hospitalized. The results obtained in these cases as well as the cases admitted directly into the hospital are incorporated in this paper.

Material and Methods

The communication is based on 357 cases admitted into the Nilratan Sarkar Hospitals during the epidemic of cholera which occurred at Calcutta from April 1952.

146 cases were brought by special ambulances. All these cases received oral terramycin in their houses and a sample of stool for culture was taken before they were transported. 214 cases were admitted directly into the hospital. Alternate cases of this group (104 cases) received terramycin and the other (107 cases) served as control. (The discrepancy in the number is due to death of 3 patients before saline transfusions could be started and these cases have been excluded from the series). All cases received saline transfusions and other supportive measures according to indications as soon as they were admitted.

V. cholerae was isolated from the stools of 190 cases in the terramycin treated group and from 82 of the control cases. This communication is based on vibrio-positive cases only.

By adopting this method we were able to treat 46 cases with terramycin within 6 hours of the onset of the disease and a total of 110 cases within 12 hours. In the control group the corresponding numbers were 12 and 32, respectively.

Infants and children were excluded from the trials owing to difficulty in administering the capsules. All cases were above 7 years of age.

Examination of Stool

Stool was collected directly from the rectum by one of the following methods:

(*a*) A sterilized rubber catheter was passed and the stool was collected in a sterile test tube. This method was adopted for the first examination, and as long as the stool was liquid.

(*b*) After passing a catheter a few c.c. of normal saline was injected through it and the rectal washing collected in a test tube. This method was adopted when the stool was formed. A rectal swab was also taken in many of these cases. Bacteriological examination of all specimens was done within a short time of collection. The first specimen of stool from every case was plated on modified Wilson and Reilly's solid medium (Pandit, 1941). Subsequent samples were inoculated also into modified Wilson and Blair's liquid medium (Reid, 1939) and plated on the solid medium after 24 hours incubation. *V. cholerae* was identified by study of morphological characters, biochemical reaction, and agglutination test using specific Inaba and Ogawa 'O' sera. Hæmolytic test was done on some strains. A case was considered to be vibrio-free if consecutive cultural examinations for three days gave negative results.

Estimation of terramycin was also carried out in the stools collected 6 hours and 24 hours after its administration, in a small series of cases. The method was as follows:

When the stool was liquid, it was centrifuged and the supernatant fluid was heated at 80° C. for 15 minutes for sterilization. Solid stool was diluted in distilled water for centrifuge. The supernatant was then diluted serially in N. broth, and a small loopful of 24 hours broth culture of Oxford staphylococcus was added to each tube. After 24 hours incubation the tubes were examined for opacity. A control was made each time with a standard terramycin solution.

Clinical data of each case was recorded immediately after admission and the specific gravity of the blood and blood pressure were taken before saline transfusions were given.

The oral dose of terramycin was 4 capsules of 250 mgms. initially and two capsules after two hours and two capsules every 4 hours till a total of 26 to 30 capsules were given. Any ejected in the vomitus were re-administered.

Results

Of the 357 cases in this series the stool showed the presence of *vibrio cholerae* in 272 cases, the remainder were vibrio-negative numbering 85 cases. As treatment has to commence before bacteriological results are available these patients were also treated on the same lines as those who subsequently proved to be vibrio-positive. By way of interest mortality of the vibrio-negative cases is also presented in Table 1. For the purpose of the present communication, however, the detailed results obtained in vibrio-positive cases only will be considered.

Table 1—Showing Vibrios and Mortality

	Terramycin			*Control*		
	Total No.	*Death*	%	*Total No.*	*Death*	%
Vibrio positive	190	22	11·6	82	15	18·3
Vibrio negative	60	3	5	25	0	

1. *Duration of Illness*—Cases were analysed with regard to duration of illness and the effect of terramycin, if any. For obvious reasons the numbers of the control and terramycin treated cases have varied.

Consequently the results were submitted to statistical analyses in order to evaluate the efficiency of terramycin in these cases. The results are presented in Table 2. It will be seen that the mortality of the terramycin treated cases appear to be lower than that in the control group. Statistical analysis, however, shows that this reduced mortality is only apparent. The apparent overall advantage noticed in favour of terramycin treated cases, namely, death rate of 11·57 per cent as against 18·3 per cent in the control series is not statistically significant, the value of x^2 being 2·196. It is known to all experienced in the treatment of cholera that the prognosis becomes more favourable when treatment is commenced early. Consequently our cases were sub-divided into '6 hour' period from the commencement of illness. The table demonstrates that the prognosis deteriorates considerably between 6 to 12 hours as compared with the earlier '6 hour' period. This is observed in both the groups. Analysis shows that the difference between the 0-6 hrs. group as compared against 6 to 12 hrs. group is of high statistical significance, the value of x^2 being 7·308. However, the inter-group difference between the terramycin treated and control cases does not reveal any statistical significance. This is of importance specially in view of the apparent reduced mortality rate in terramycin treated cases.

TABLE 2—SHOWING DURATION OF DISEASE ON ADMISSION AND MORTALITY

Duration of disease on admission in hours	*Terramycin*			*Control*		
	Total No.	*Death*	*%*	*Total No.*	*Death*	*%*
0 to 6	46	2	4·3	12	1	8·5
6 to 12	63	13	20·3	20	6	30
12 to 18	37	3	8	18	1	5·5
18 to 24	18	3	16·6	17	4	23·5
Over 24	25	1	4	15	3	20
	190	22	11·57	82	15	18·3

N.B.—The apparent overall advantage noticed in favour of terramycin treated cases (190 cases with 22 deaths—11·57 per cent as against 82 cases and 15 deaths—18·3 per cent) is not statistically significant. x^2 value—2·196.

Similarly the differences in the results of the sub-group 0-6 hours (P—0·507) and 6-12 hours (x—0·817) when terramycin treated cases are compared with control are also not significant.

II. *Blood Pressure*—Peripheral failure is regarded as an important cause of fatality in cholera, irrespective of the underlying mechanism involved in the occurrence of peripheral failure in these cases. It is known that severe depression of blood pressure is to be avoided in a successful treatment of cholera. It was, therefore, considered desirable that our cases be analysed in relation to blood pressure with regard to the effectiveness of terramycin. The critical level of blood pressure selected for the purpose of this analysis is 50 mm. Hg. systolic, because it is generally regarded that with persistence of blood pressure below this level irreversible changes set in. The results of the analyses are shown in Table 3. In 92 patients in the whole series the B. P. was 50 mm. Hg. or above. Among these there were 6 deaths (6·5 per cent). In 180 cases the B. P. was less than 50 mm. Hg. with 31 deaths (17·2 per cent). Statistical analysis shows that the advantage noticed in patients with 50 mm. or more systolic pressure compared against those with less than 50 mm. Hg. is statistically significant, the value of x^2 being 5·932. Intergroup comparison, however, does not show any statistical significance whether above or below 50 mm. Hg. blood pressure level. The value of x^2 being 0·0172 and 1·082 respectively the difference in the results shown in the table therefore is merely apparent.

TABLE 3—SHOWING BLOOD PRESSURE AND MORTALITY

Blood Pressure in mm. of Hg.	*Terramycin*			*Control*		
	Total No.	*Death*	*%*	*Total No.*	*Death*	*%*
50 to above	71	4	5·6	21	2	9·5
0 to 49	119	18	15·1	61	13	21·3

N.B.—The advantage noticed in the group with blood pressure of 50 and above (92 cases with 6 deaths) against those with blood pressure of 0 to 49 (180 cases with 31 deaths) is statistically significant (x^2—5·932).

III. *Specific Gravity of the Blood*—The specific gravity of the blood was determined by the Copper Sulphate method in every patient in both terramycin treated and control cases. No significant difference was noticed between the two groups.

IV. *Bacteriological*—The results given in Table 4 clearly demonstrates the marked *in vivo* action of terramycin in cases of cholera; most of the cases ceasing to excrete vibrios after 24 hours. The present investigation was later extended to determine the rapidity with which stools become free from vibrios. No vibriocidal activity was found in 12 samples of stools examined 2 hours after the administration of terramycin. Out of 18 samples of stools examined 6 hrs. after terramycin was administered, in only 3 cases some reduction in the number of colonies were noticed and traces of terramycin were detected in these three stools. In the remainder terramycin could not be detected in the stools at this period. Estimation of terramycin was also done in 12 cases from stools collected twenty-four hours after its oral administration, and all the samples examined showed the presence of terramycin in a concentration varying between 50 and 250 micrograms per gram of stool.

TABLE 4—SHOWING PERSISTENCE OF VIBRIOS IN STOOLS

Day	Terramycin Total Examined	Terramycin Vibrio-positive No.	Terramycin Vibrio-positive %	Control Total Examined	Control Vibrio-positive No.	Control Vibrio-positive %
1st day (before treatment)	250	190	75	107	82	76·6
2nd ,, ...	175	18	10·3	72	62	86·1
3rd ,, ...	174	2	1·1	71	45	63·3
4th ,, ...	172	1	0·58	69	20	29·6
5th ,, ...	172	0		68	7	10·2
6th ,, ...	168	0		66	4	6
7th ,, ...	166	0		66	2	3

N.B.—The difference in the rate of disappearance of vibrios under terramycin treatment as compared with control is statistically significant to a high degree in favour of terramycin.

DISCUSSION

The present investigation confirmed our preliminary observation that terramycin possessed vibriocidal activity in cholera although this by itself did not seem to reduce the mortality to any appreciable extent. Our observations are now based on a fairly large series of cases for the assessment of the value of terramycin administered orally in cases of cholera. The analyses have been aimed at from various angles in order to determine if the drug had any advantage in any particular direction even though it did not help to reduce the gross mortality. The results of investigation show that no such advantage can be observed under any category with regard to the clinical course of the disease. However it may be mentioned that experience with terramycin shows that in patients treated with this drug formed stools appear somewhat earlier than in control cases. Attention may be drawn to two facts, which though not related to terramycin, are of some clinical importance. These relate to the duration of illness before the treatment is commenced and the extent of peripheral failure as judged by the level of blood pressure. The mortality of patients receiving treatment whether with terramycin or without, within 6 hours of the commencement of the disease is appreciably less than that amongst those whose treatment is delayed for a longer period. It is obvious that if the mortality of cholera has to be reduced to a level lower than that at present, treatment must commence at the earliest stage of disease. For this purpose campaign and education of the public are essential. The second feature of the analyses is the very high mortality found amongst those whose blood pressure drops to 50 mm. Hg. systolic or less. Here again the peripheral failure is to a great extent caused by a loss of body fluids which in many cases is due to delay in commencement of treatment. In this respect also terramycin possesses no advantage and from the point of view of treatment, measures to restore the circulatory equilibrium seem to be more important than the choice of a particular antibiotic.

The most striking effect of terramycin in cholera is its vibriocidal activity. However the important feature to be noted is that terramycin given orally did not appear in the stool in appreciable amount within 6 hours of its administration. The vibriocidal activity becomes apparent sometime between six and twenty-four hours of the commencement of the antibiotic therapy. This has two important implications.

The first, which is obvious is that oral terramycin cannot be in a position of either replacing or reducing the amount of saline infusion necessary depending on the clinical condition of the patient at the time treatment is commenced.

The second implication is being at present followed and is under investigation. If some means can be evolved by which sufficient concentration of terramycin could be made to reach the small intestine, within a short time of the administration of the drug, a better result than at present may reasonably be expected.

SUMMARY

1. An analysis of 190 cases of cholera treated with terramycin and 82 control cases is presented.

2. The results have been analysed both from clinical and bacteriological points of view.

3. The results show that oral terramycin by itself does not appear to have an additional advantage in the clinical management of a case of cholera.

4. The vibriocidal activity of terramycin is marked but this becomes manifest between six and twenty-four hours after the administration of the drug.

5. The prognosis of a case of cholera improves if the patient receives treatment soon after the commencement of the illness and before blood pressure drops to less than 50 mm. Hg. systolic.

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INTRAVENOUS TERRAMYCIN IN CHOLERA

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During the trial with oral terramycin in cases of cholera it was noticed that when stool cultures were taken 6 hours after the oral administration of the drug, no vibriocidal action could be consistently observed at this period. Mere traces of terramycin could be detected in the stool only in 3 out of 18 cases, 6 hours after the administration of the drug. It is possible that there was stasis in the stomach due to delayed emptying; so the drug did not reach the intestines sufficiently quickly. Such stasis has been reported by Marriot (1947) to occur in conditions associated with dehydration and salt depletion.

In cholera, there is rapid escape of plasma fluid into the intestinal lumen, so the drug injected intravenously may reach the intestine with great rapidity. It has been noted by one of us (Saha and Das, 1952) that sodium thiocyanate injected intravenously could be recovered from the stool in appreciable quantity within an hour. It could be expected that terramycin would also appear in the intestinal lumen within a short period, if it were equally diffusible. It was therefore felt that a trial of the drug injected intravenously may be undertaken in cases of cholera.

Materials and Method

Twenty-six alternate cases of cholera admitted into the Nilratan Sarkar Hospital, Calcutta, during the months of June and July, 1952, were given a single dose of 500 mgm. of terramycin intravenously with the first pint of saline. An equal number of alternate cases were treated with saline alone. Twenty cases in the terramycin treated group, and sixteen of the controls proved to be vibrio-positive. This communication is based on results of trial on vibrio-positive adult cases only.

Stools were cultured in all cases every 24 hours after commencement of treatment. In 10 cases treated with terramycin stool was cultured and terramycin content of the stool was estimated, 2 hours and 6 hours after the administration of the drug. The technique of the bacteriolcgical examination and estimation of terramycin in the stool was the same as described in our paper on oral terramycin.

Results

Clinical—The clinical data with regard to these cases are given in Tables 1, 2, 3 and 4.

Table 1—Duration in Hours and Mortality

Hours	*Intravenous Terramycin*		*Control*	
	No.	*Death*	*No.*	*Death*
0 to 6	2	0	2	0
6 to 12	7	0	3	1
12 to 18	3	0	6	1
18 to 24	6	0	5	0
Over 24	2	0	0	0

Table 2—Blood Pressure and Mortality

B. P.	*Intravenous Terramycin*			*Control*		
	No.	*Death*	*%*	*No.*	*Death*	*%*
Above 50	2	0	0	0	0	0
0 to 49	18	0	0	16	2	12·5

Table 3—Age and Mortality

Age in years	*Intravenous Terramycin*		*Control*	
	No.	*Death*	*No.*	*Death*
11 to 20	7	0	5	1
21 to 40	8	0	7	1
Above 41	5	0	4	0

Table 4 Specific Gravity and Mortality

Sp. Gravity	*Intravenus Terramycin*		*Control*	
	No.	*Death*	*No.*	*Death*
1066 and above	18	0	9	2
1065 and below	2	0	7	0

There was no death in the 20 cases treated with intravenous terramycin. Two cases (12·5 per cent) died in the control series of 16 cases. The advantage noticed in favour of terramycin is, however, not statistically significant (P—0·1904).

Table 5—Persistence of Vibrio and Mortality

	Intravenous Terramycin			*Control*		
	No.	*Vibrio-positive*	*%*	*No.*	*Vibrio-positive*	*%*
1st day (before treatment)	26	20	77	26	16	
2nd ,, ...	20	3	13·6	14	12	85·7
3rd ,, ...	21	0	0	14	11	78·5
4th ,, ...	21	0	0	14	4	28·6
5th ,, ...	20	0	0	14	2	14·3
6th ,, ...	20	0	0	12	1	8·3
7th ,, ...				12	0	

*Deceased since presentation of this paper.—Ed., *J. Indian M. A.*

Bacteriological—It will be noticed from Table 5 that intravenous administration of terramycin excited a marked vibriocidal activity in 24 hours. We also tried to find out the minimum time in which terramycin can be detected in the stools and also the shortest period in which it could cause destruction of *vibrio cholerae* in the small intestines. Samples of stools for this purpose were collected 2 hours and 6 hours after the administration of the drug and examined. Cultures of stools 2 hours after administration of terramycin did not reveal any bactericidal action. Samples collected after 6 hours interval did not reveal marked reduction in the number of colonies but estimation of terramycin in 10 samples of stools collected at test period showed that 6 of these contained the drug in a concentration of 4 to 16 micrograms per c.c.

The bacteriological results suggest that terramycin appears more quickly in the stools when given intravenously than when given by the oral route.

Discussion

The preliminary investigation recorded above is an outcome of reconnoitering into the therapeutic application of the vibriocidal effect of terramycin. The series is small and conclusions are at the present stage indefinite; so the findings can be regarded as only of limited value.

The therapeutic results of intravenous terramycin in the cases presented above do not show any difference at this stage from those which served as control. The absence of death in the present series of 20 cases is of no statistical significance. The bactericidal effect of terramycin did not manifest itself even 6 hours after the administration of the drug. However it is of interest to note that terramycin injected intravenously is recoverable from the stool at six hours in a concentration of 4 to 16 micrograms per ml. Our previous *in vitro* studies showed that terramycin is vibriostatic at a concentration of 2 to 5 micrograms per ml. It should be noted that despite this, no vibriocidal action was exerted on the intestinal contents by the drug at the concentrations stated above. The probable reason for this discrepancy of results is the fact that the drug could not remain in contact with the organisms for a long enough time, to exert its vibriocidal property.

Summary

1. The therapeutic, vibriocidal effect, and excretion of intravenously injected terramycin was studied in 20 vibrio-positive cases of cholera.

2. Clinical results do not show any significant difference from the control series.

3. Terramycin was recovered from the stool in a concentration of 4 to 16 micrograms per ml. in 6 out of 10 cases 6 hours after the injection of the drug. However, this was not associated with an appreciable vibriocidal activity in the stool.

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THE EFFECT OF CERTAIN INDIGENOUS REMEDIES ON THE HEALING OF WOUNDS AND ULCERS

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In this study ulcers were produced in experimental animals and the effect of certain remedies in their healing was estimated. The experimental animals used were rabbits and white mice. Sixty-two rabbits and 36 mice were employed. Each animal with two ulcers served both as the test as well as control animal.

The remedial agents employed included:

1. The leaf-juices of:
   - *a.* Spinach (*Spinacea oleracca*)
   - *b.* Betel (*Piper betel*)
   - *c.* Kukronda (*Blumea balsamiflora*)
   - *d.* Neem (*Melia azadrachta*)
   - *e.* Ghao-patti (*Argiera speciosa*)
   - *f.* Cabbage (*Brassica oleracca*)
2. Powdered blood cells.
3. Turmeric powder (*Curcuma longa*)
4. Scarlet red ointment.
5. Sulfanilamide powder.
6. Caustics in dilute solutions:
   - *a.* Copper sulphate—
     - (1) 0·5 per cent solution.
     - (2) 0·1 per cent solution.
   - *b.* Silver nitrate—0·1 per cent solution.

For comparison the non-indigenous agents were included.

Four types of ulcers were produced:

1. Contact paraffin-burn.
2. Aseptic superficial skin ulcers.
3. Septic superficial skin ulcers.
4. Corneal ulcers.

Technique for Production of Ulcers: 1. *Contact paraffin burn*—A metal disc (about 1 cm. in diameter) with a handle was heated for two minutes in liquid paraffin kept at 160°C. It was then taken out and immediately applied over the prepared skin of the

back of the anæsthetised rabbit with a constant pressure for one minute. The process was repeated for every ulcer. Two such lesions were produced (four in some cases) one on each side of the midline at similar points. This resulted in the production of a third degree burn, the burnt skin sloughing off on the second or subsequent days.

2. *Aseptic Superficial Skin Ulcers*—A rounded area about one centimeter in diameter was marked out on each side over the prepared skin with mercurochrome. One quarter to one half cubic centimeter of 2 per cent procaine hydrochloride solution was injected intracutaneously and subsequently at the centre of each area. The bleb, thus formed, was lifted up with a tissue forceps, and the demarcated area was cut away by a pair of scissors. The skin and the underlying subcutaneous tissue were included in the excision.

For a rat a smaller area (0·8 cm. in diameter) was marked, and the excision effected without anæsthesia.

3. *Septic Superficial Skin Ulcers*—The aseptic ulcers produced in the above manner were inoculated with a drop of 24 hour broth culture of staphylococcus aureus and left covered with a piece of leucoplast. On the next day the ulcers were found covered with frank pus.

4. *Corneal Ulcers*—Intracorneal injection of a 24 hour broth culture of staphylococcus aureus by an intradermal needle and a tuberculin syringe produced an abscess in the substance of the cornea. The abscess was incised on the second or third day, creating an ulcer which healed within 24 to 48 hours, as shown by fluorescein stain. The intracorneal abscesses and the ulcers were, however, never identical as regards size and situation in both eyes of the same rabbit.

The right side superficial skin ulcers and the left side corneal ulcers were used as test ulcers in all the animals, and the left side superficial skin ulcers and the right side corneal ulcers served as control ulcers. This choice eliminated any discrepancy that might have remained in size and situation of the test and control ulcers. The test ulcers were treated twice daily in every case and both ulcers were left open.

Remedial Agents Used

1. *Juice from green leaves*—A sufficient quantity of the fresh leaves of the plant under investigation was well washed under the tap and bruised in a mortar. The juice was squeezed with a gauze on to the test ulcer, or was instilled into the test eye with a pipette. Each time fresh juice was used.

2. *Turmeric powder*—Dry powdered turmeric was rubbed with a little water into a pasty consistence and applied over the test ulcer.

3. Scarlet red was used as a 5 per cent ointment.

4. Sulfanilamide powder, and

5. Powdered blood cells were dusted over the test ulcers.

6. Silver nitrate in 0·1 per cent solution and copper sulphate in 0·5 per cent and 0·1 per cent solutions were applied topically with cotton swabs.

A study of the bacteriostatic effect of the juices of *spinach, betel, kukronda* and *neem in vitro* against staphylococcus aureus was also made.

Summary of Observations

The observations and the results of the remedial agents investigated on different types of experimental ulcers have been summarised in the accompanying tables.

Table 1—Contact Paraffin Burn in Rabbits

Remedial agents	No. of animals	Mean healing time of test ulcers in days	Mean healing time of control ulcers in days	% Acceleration in rate of healing
1. Spinach	2	25	26	4
2. Betel	2	22	26	16
3. Kukronda	2	17	23	26
4. Neem	2	16·5	17	3
5. Ghao-patti	2	16·5	19	13

Table 2—Septic Superficial Skin Ulcers in Rabbits

Remedial agents	No. of animals	Mean healing time of test ulcers in days	Mean healing time of control ulcers in days	% Acceleration in rate of healing
1. Spinach	2	13·5	16·0	15·6
2. Betel	3	11 3	14·0	19·0
3. Neem	3	12·3	14·6	15·5
4. Ghao-patti	2	10·0	12·0	16·6
5. Cabbage	1	16·0	18·0	11·0

Table 3—Aseptic Superficial Skin Ulcers in Rabbits

Remedial agents	No. of animals	Mean healing time of test ulcers in days	Mean healing time of control ulcers in days	% Acceleration in rate of healing
1. Leaf-juices:				
a. Spinach	2	13·5	16·5	18
b. Betel	3	10·0	12·3	19
c. Neem	2	13·5	15·0	10
d. Ghao-patti	2	10·0	11·5	13
e. Cabbage	6	7·83	10·0	21
2. Powdered blood cells	3	11·6	13·6	14·6
3. Turmeric powder	3	17·62	10·0	23·3
4. Scarlet red ointment	3	9·0	11·6	23·3
5. Caustics: Copper sulphate 0·1%	3	9·3	11·0	15·5

TABLE 4—SEPTIC SUPERFICIAL SKIN ULCERS IN RATS

Remedial agents	No. of animals	Mean healing time of test ulcers in days	Mean healing time of control ulcers in days	% Acceleration in rate of healing
1. Leaf-juices:				
a. Kukronda	3	6·0	8·0	25
b. Cabbage	3	9·3	11·6	19·8
2. Turmeric powder	3	6·6	9·0	26·6

TABLE 5—ASEPTIC SUPERFICIAL ULCERS IN RATS

Remedial agents	No. of animals	Mean healing time of test ulcers in days	Mean healing time of control ulcers in days	% Acceleration in rate of healing
1. Leaf-juices:				
a. Betel	3	5·3	7·0	23·8
b. Kukronda	3	6·6	9·0	26·6
c. Cabbage	3	7·3	9·6	23·8
2. Turmeric powder	6	8·2	11·0	24·2
3. Sulfanilamide	3	7·0	7·3	4·7
4. Scarlet red ointment	3	6·0	7·3	17·7
5. Caustics:				
a. Copper sulphate 0·5%	3	4·0	5·3	−32
0·1%	3	6·0	7·0	14·3
b. Silver nitrate 0·1%	3	3·6	4·6	15·2

1. *Experimental ulcers produced in rabbits*:

In the contact paraffin burn ulcers, the mean healing time of the control ulcers ranged between 17 and 26 days. The percentage acceleration in the rate of healing of the test ulcers with the different remedial agents was spinach 4 per cent, betel 16 per cent, kukronda 26 per cent, neem 3 per cent and ghao-patti 13 per cent.

In septic superficial skin ulcers the mean healing time of the control ulcers extended between 12 and 18 days. The percentage acceleration in the rate of healing of the test ulcers with the different remedial agents was spinach 15·6 per cent, betel 19 per cent, neem 15·5 per cent, ghao-patti 16·6 per cent and cabbage 11 per cent.

In aseptic superficial skin ulcers the mean healing time of the control ulcers extended between 10 and 16·5 days. The percentage acceleration in the rate of healing of the test ulcers with the different remedial agents was:

Spinach 18 per cent, betel 19 per cent, neem 10 per cent, ghao-patti 13 per cent, cabbage 21 per cent, powdered blood cells 14·6 per cent, powdered turmeric 23·3 per cent, scarlet red ointment 23·3 per cent, copper sulphate 0·1 and 15·5 per cent.

2. *Experimental ulcers produced in rats*:

In septic superficial skin ulcers, the mean healing time of control ulcers extended between 8 and 11·6 days. The percentage of acceleration in the rate of healing of the test ulcers with different remedial agents was: kukronda 25 per cent, cabbage 19·8 per cent, powdered turmeric 26·6 per cent.

In aseptic superficial skin ulcers, the mean healing time of the control ulcers extended between 4·6 and 11 days. The percentage acceleration in the rate of healing of the test ulcers with the different remedial agents was: betel 23·8 per cent, kukronda 26·6 per cent, cabbage 23·8 per cent, powdered turmeric 24·2 per cent, sulfanilamide powder 4·7 per cent, scarlet red ointment 17·7 per cent, copper sulphate 0·1 per cent solution 14·3 per cent, silver nitrate 0·1 solution 15·2 per cent. When copper sulphate solution used was in 0·5 per cent strength, healing was retarted by 32 per cent.

The difference in the mean healing time of the control ulcers as seen in the above tables when the ulcers produced were of approximately equal dimensions is due to the variations in the size, age and individual resistance of the animals employed. In the group of 9 rats used for investigation of the caustics, the mean healing time of the control ulcers ranged between 4·6 and 7 days and these animals were 1½ to 2 months of age. The process of healing, therefore was faster in the younger age group.

3. *Corneal ulcers*:

The proliferating power of the corneal epithelium is so great that an excision ulcer of the cornea healed within 24 to 48 hours. It proved technically difficult to produce two identical ulcers in the two eyes of the rabbit.

The progress of intracorneal abscesses did not give any reliable information in the evaluation of the test juices employed as the two abscesses, the test and the control, were never identical as regards size and situation.

CONCLUSION

Of the remedial agents investigated for their effects on various types of experimental ulcers, the best effect was obtained by local application of juice of kukronda leaves, enhancing the rate of healing by 25 per cent or more in all types of superficial skin ulcers.

Powdered turmeric was second best, enhancing the rate of healing 23·3 per cent in aseptic ulcers in rabbits, by 24·2 per cent in aseptic ulcers in rats and by 26·6 per cent in septic superficial skin ulcers in rats. Its action appeared to be superior to that of scarlet red ointment which produced a corresponding acceleration in the rate of healing by 23·3 per cent in aseptic ulcers in rabbits and 17·7 per cent in aseptic ulcers in rats.

Betel and cabbage come next in order as healing agents, the former accelerating the rate of healing by

16 per cent in burn ulcers, 19 per cent in septic, and 19 per cent in aseptic superficial skin ulcers in rabbits, and by 23·8 per cent in aseptic ulcers in rats, and the latter accelerating the rate of healing by 11 per cent in septic and 21 per cent in aseptic ulcers in rabbits and 19·8 per cent in septic and 23·8 per cent in aseptic ulcers in rats. The caustics employed in this study accelerated the rate of healing by about 15 per cent when used as 0·1 per cent solutions. Copper sulphate, however, retarded the rate of healing by 32 per cent when used as 0·5 per cent solution. The rest of the remedial agents employed accelerated rate of healing by 15 per cent or less. Sulfanilamide powder did not produce any material difference in the healing time of the test and the control ulcers. However, it did not appear to retard the process of healing. None of the leaf-juices tested showed any bacteriostatic effect on the growth of staphylococcus aureus *in vitro*.

BILATERAL SYMPATHICOGONIOMA OF SUPRARENALS

Report of a Case and Review of Literature

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Tumours of the suprarenal gland are sufficiently rare to justify the publication of this case. This case is the first one to be studied by us. A number of excellent reviews have appeared on this subject in the literature (Scott, Oliver and Oliver, 1933; Blacklock, 1934; Askin and Geschickter, 1935; Redman *et al*, 1938). Most recent addition, however, is a monograph (Karsner, 1950) from the Armed Forces Institute of Pathology under the auspices of the National Research Council of United States of America. It is not possible to estimate accurately the number of such cases reported in the literature as the same neoplasm has been reported under different names. It seems, however, that approximately 325 cases of "neuroblastoma" of the adrenal gland have been reported in the literature (Kouyoumdjian and McDonald, 1951).

Case Report

A seven years old male child was found dead on the bank of a village pond, about 14 miles away from here. The body was brought by the Police for autopsy to the Civil Surgeon, Lucknow, who was kind enough to consult us. A complete autopsy was performed. No clinical history was available.

The body was of a markedly emaciated, pale looking male child about 7 years of age. The abdomen was protuberant. No other abnormality could be seen exteriorly.

Description of Gross—The abdominal viscera were entangled into a large mass which was adherent to the under-surface of the diaphragm and was removed *en masse*. It was irregular in outline, and weighed 3,000 gms.

On the anterior aspect the mass was covered superiorly by stomach, spleen and liver and in the lower half by loops of small intestines, transverse colon, and the cæcum. Ascending colon was placed nearer the right edge and the descending colon nearer the left (Fig. 1, *vide* Plate).

On the posterior aspect the mass presented a broad central vertical groove corresponding to the vertebral column. A portion of the abdominal aorta and superior cava were seen in the superior portion of this depression but lower down they were lost inside the mass. (Fig. 2, *vide* Plate).

Liver, spleen, stomach, loops of ileum, cæcum, appendix, ascending colon, transverse colon and the descending colon could be separated from the mass with comparative ease after cutting through the adhesions. Both the kidneys, however, were more firmly adherent. The left kidney was situated more anteriorly than the right. The pancreas and the right adrenals were unidentifiable. Nearly all of the mesenteric glands were enlarged, firm and nodular.

After removal of the mesentery the 2nd, 3rd and 4th parts of duodenum were found to be embedded inside the mass. The mass itself appeared to be composed of a number of firm nodules which varied from 2-4 cm. in their longest dimensions. Some of the nodules were golden yellow, others were greywish white and still others fleshy or hæmorrhagic in colour.

A coronal section (Fig. 3, *vide Plate*) of the whole mass was made passing through the middle of the right kidney. The cut anterior surface of the mass showed both the right and left kidneys on the lateral sides of the mass. Both the kidneys were entire in their outline with well defined cortex and medulla. The ureters of either side were embedded inside the mass. The superior pole of the right kidney appeared to be compressed.

The right suprarenal was untraceable and its place was taken by a collection of nodules in an area of 10×8 cm. The superolateral aspect of this area seemed to be capsulated. To the left and below, this area imperceptibly merged into other nodules; cut portion of the duodenum could be seen in superior portion of the nodular mass. The cut surface of the nodules presented similar variation of colour as seen from outside. The left suprarenal was found to be enlarged, irregular, white and firm in consistency on the upper pole of the left kidney.

No gross abnormality was detected either from outside or from inside in the stomach, ileum, cæcum, appendix, ascending, transverse or descending colon. Glands, gastroliensl, prepyloric or along porta hepatis were all enlarged, firm shotty and pale white in colour. Mesenteric glands all along the ileum, and retrocaecal lymph nodes were also enlarged. A bunch of enlarged lymph glands was seen at the hilum of the spleen.

The liver weighed 350 gms. Its under surface (especially the caudate lobe) was adherent to a large fleshy nodule of the mass. Superiorly the diaphragm was adherent to the posterior and upper surfaces of liver. In addition a few yellowish white nodules were also seen over the anterior surface and along the anterior border of the liver. On the cut surface these nodules were extending into the subcapsular region (Fig. 4, *vide* Plate).

Fig. 1—Anterior view of the abdominal viscera *in situ*. Liver can be seen above and the coils of intestine below. A number of enlarged mesenteric nodes can be seen in between.

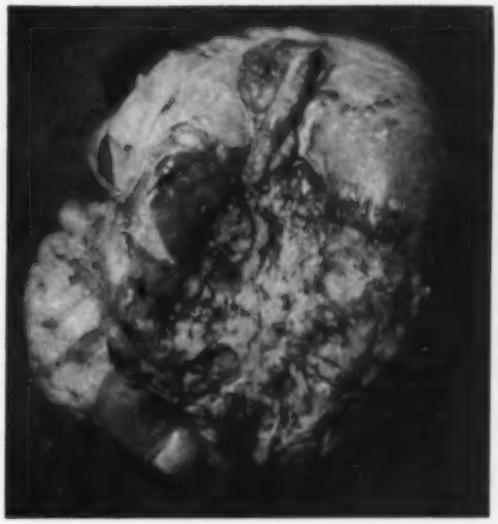

Fig. 2—Posterior view of the mass. Aorta can be seen in the superior portion of the vertical groove.

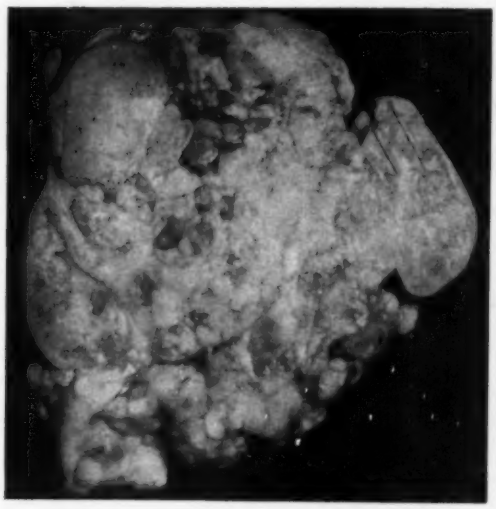

Fig. 3—Cut surface of the mass. Both the kidneys (entire in their outline) can be seen on either side of the mass. The tumour is composed of large number of multicoloured nodules.

Fig. 4—Shows disengaged viscera, viz., spleen, liver, stomach, caecum and a part of ileum. Mesenteric glands gastric lymph nodes and lymph nodes at the hilum of spleen are enlarged. A few nodules can be seen along the anterior border of the liver.

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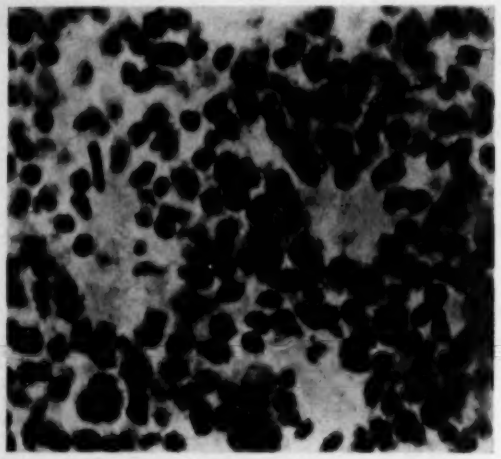

Fig. 5—High power microphotograph of the tumour showing typical "rosettes". (×550).

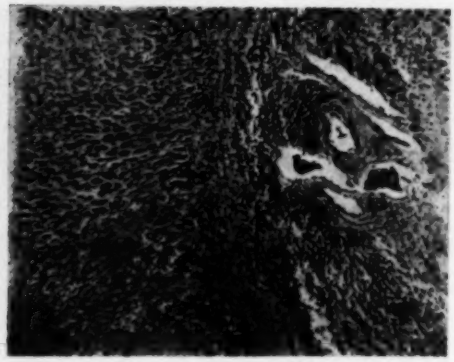

Fig. 6—Microphotograph of a section through the tumour mass. Normal looking adrenal cortex is seen in upper half. The lower half constitutes the tumour. Two tumour cell emboli are seen in the perivascular lymphatics. (×50).

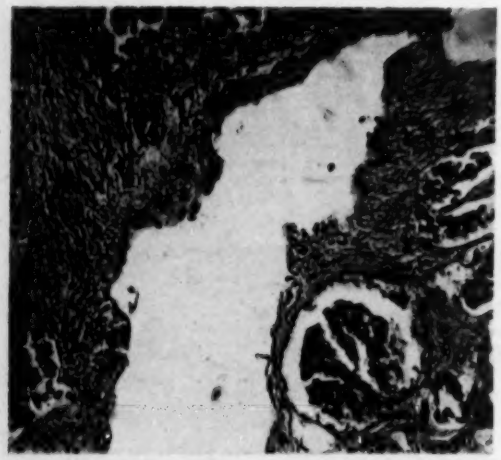

Fig. 7—Microphotograph of the kidney showing a large renal vessel. Renal parenchyma can be seen in the lower right corner of the field. Tumour cell emboli are seen in the perivascular lymphatics. (×180).

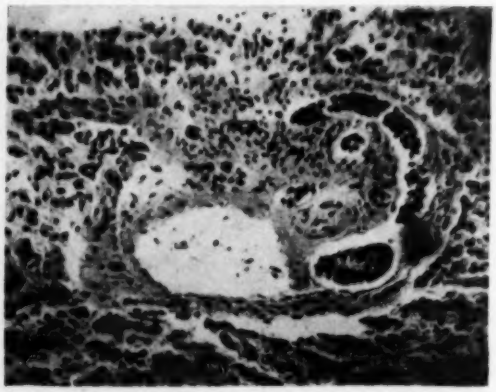

Fig. 8—Microphotograph of liver shows a portal tract with adjacent surrounding liver parenchyma. Tumour cell emboli are seen in the perivascular lymphatics (×180).

The lung was normal in appearance. No macroscopic deposits of tumour could be made out. No metastatic deposits could be seen in other viscera including brain and eyes. No evidence of tumour metastasis was found in the cranial bones, orbital bones, long bones or in the vertebral column.

Microscopic Examination—Three large nodules from the main mass situated near the right kidney were subjected to histopathological examination. In all of them the histological appearances were similar, showing small, rounded or ovoid cells with a prominent darkly staining nucleus and a fine rim of light acidophilic cytoplasm. The cells mostly arranged in solid masses, exhibited a remarkable degree of uniformity of shape and size. At some places the cells were loosely scattered and showed fine silver impregnated fibrils (? neurofibrils) running in between them. Still at other places "rosette" formations were well marked (Fig. 5, *vide Plate*). Fine blood capillaries were irregularly dispersed inside the cell masses. In some areas the tumour showed extensive necrosis. In one of these nodules an elongated strip of adrenal cortex was identified. The cortical cells showed normal arrangement and cytology (Fig. 6, *vide* Plate).

The medulla of the left suprarenal gland was also replaced by tumour cells of similar type. Strips of cortex with normally arranged cortical cells could be seen in the form of a "V".

Microscopic examination of the superior pole of the right kidney together with the adjacent tumour nodule showed the renal capsule to be intact. The renal parenchyma presented no structural deformity. Tumour cell emboli were seen in the perivascular lymphatics of the larger renal vessels (Fig. 7, *vide* Plate). Similar histological pictures were met with in the left kidney.

Histopathological studies of blocks from spleen, the walls of stomach, ileum, cæcum and ascending colon showed no infiltration with tumour cells. All the lymph nodes, however, showed extensive tumour cell infiltration. Duodenal wall was intact and in some of the small capillaries in submucosa tumour cell emboli were present.

The capsule of the liver at the site of adhesion with the mass and also the subjacent liver parenchyma were infiltrated with tumour cells (Fig. 8, *vide* Plate). Tumour cell emboli were seen in practically all the perivascular lymphatics of the portal tracts of the caudate lobe. Some of the liver cells showed marked fatty change. The diaphragm was diffusely infiltrated with tumour cells.

Discussion

Virchow (1864) first recognised these adrenal medullary tumours to be of nervous tissue origin and classified them under gliomas. Marchand used the term "sympathetic building cells" but it was Wright, who in 1910, conclusively demonstrated "the nervous origin of these tumours and emphasized upon the similarity of the morphology and the arrangement of cells and fibrils in these growths to those in the developmental stages of the adrenal medulla and the sympathetic nervous system" 'Andersen, 1951). Wright's original microphotographs have also been reproduced by Karsner (1950).

To understand the exact origin of these tumours it is necessary to recapitulate our knowledge of embryology. Patten (1946) observed that "in the embryo, certain cells of the neural crest migrate ventrally, from the sympathetic ganglia and give origin to the essential cells of the adrenal medulla. These mature cells have an affinity for chromic salts and produce epinephrine. They occur in the adrenal medulla and in the paraganglionic chromaffin bodies or paraganglia." A similar view has been expressed by Bielchowsky (1932) who stated, in his discussion of the embryogenesis of sympathetic ganglia, that sympathogonia or the primitive neurocytes are not only the mother cell of sympathetic ganglion cell but also of the chromaffin cells (pheochromocyte). He postulated the development of the sympathogonia as follows:—

SYMPATHOGONIA (Primitive Neurocytes)
(Sympathogonioma)

SYMPATHOBLAST (Sympathicoblastoma)	PHEOCHROMOBLAST (Pheochromoblastoma)
SYMPATHETIC GANGLION CELL (Ganglioneuroma)	PHEOCHROMOCYTE (Pheochromocytoma)

N.B.—For the sake of clarification the tumours of adrenal medulla showing preponderant type of cell are inserted under its corresponding cell of origin.

Karsner (1950) upholds the view expressed by Bielchowsky. He has further given the description of each particular cell of the above "family tree." He describes sympathogonia as a cell which has a dense nucleus rich in chromatin and a scanty rim of cytoplasm. The sympathoblast according to him is larger with a vesicular nucleus and more cytoplasm and more often a short cytoplasmic process.

Bielchowsky's view is shared nearly by all, though there are still some who think there are two mother cells, from the one arise sympathoblasts and sympathetic ganglion cells and from the other pheochromocytes or paraganglion cells.

Accordingly then, the tumour (sympathicogonioma) arises from the primitive neurocytes or sympathogonia and consists of small cells with dense nucleus rich in chromatin and scanty rim of cytoplasm. This nomenclature has been in use only recently. The other synonyms neuroblastoma, sympathoblastoma or ganglio-sympathoblastoma, etc.—are hence confusing and it is time now that they are better dropped altogether. (Karsner, 1950).

Incidence, Age and Sex Distribution: These tumours are almost entirely found in young children, occasionally in newborns and rarely in adults. According to Karsner 80 per cent of these tumours occur in the first 2½ years of life. In Andersen's (1951) series of 24 abdominal "sympathicoblastoma" 18 had occurred in the first 3 years of life. In Lewis and Gaschickter (1934) series of 40 cases only 5 were of more than 15 years of age. Sometimes these tumours may start in intrauterine life and may cause dystocia. A number of

such cases have been reported, and at times they have been associated with other departmental anomalies (Kouyoumdsian and McDonald, 1951).

The overall incidence of these tumours is very low. Blacklock's (1934) estimate of 0·37 per cent is considered too high by Karsner (1950).

No familial disposition can be assigned to these tumours. Only once this tumour has been observed in two siblings (Dodge and Benner, 1945).

Signs and Symptoms: While it is impossible to lay down any particular group of symptoms which may in any way be said to be characteristic of this sort of neoplasm yet one must not overlook it when one meets a young child with anæmia and enlargement of abdomen. This enlargement may be wholly due to the original tumour as was in our case under report or it may be due to marked enlargement of the liver because of extensive metastatic deposits. Occasionally, when the original tumour is small and has caused extensive metastasis, the surgeon may be misled by unusual signs, for example, the patient may come with ecchymosis of lids and exophthalmos, or with nodular swellings of scalp (due to metastasis in skull bones, etc.). Rarely the patient comes with a painful swelling of one or more long bones may be associated with pathological fracture. Still rarely the patient may complain of necrosis of the pinna (Karsner, 1950).

In the past much stress has been laid on certain groups of symptoms and the "neuroblastomas" have been classified into three types. One, with extensive metastatic enlargement of liver, "Pepper's type," was supposed to arise in right adrenal medulla. The "Hutchinson type" was thought to include tumours of left medulla with extensive metastases in skull bones. Then there was "Esser-Herwing type" (Geschickter, 1934) in which there were metastases in long bones associated with leuco-erythroblastic type of anæmia. There is very little evidence to support this arbitrary classification, "because the position of the metastases is not determined by the site of original tumour." To quote Karsner, "neither clinically nor anatomically are these eponymic designations justified".

Gross and Microscopic Pathology—The gross pathology of these tumours is variable. The tumour may be unilateral or bilateral and in the latter situation it is difficult to say that they are two separate tumours or one is the metastasis of the other. The tumour may be very small or of very large dimensions. The basic colour is white and there is mottling with red, hæmorrhage, brown, blood pigment, and yellow necrosis. The tumour cuts easy and shows lobulation (Karsner, 1950). The tumour, in our case, fulfils all the criteria described by Karsner. Both the adrenals were enlarged, the right adrenal more than the left. We are not quite sure if the tumour was bilateral in origin or that the enlarged left adrenal was due to a metastasis from the right adrenal tumour. In the case under report though the tumour had invaded all the lymph nodes of the mesentery, the prepyloric glands, and the hilar glands of the spleen, it had respected the anatomical integrity of adjacent organs such as spleen, liver, stomach, ileum, cæcum, colon, kidneys and duodenum, aorta and inferior vena cava. The last three structures were embedded in the tumour mass but still their outlines were well preserved. The only organ which we failed to identify was the pancreas. Karsner's experience is otherwise.

Occasionally sympathicogonioma may not arise from adrenal medulla but from other sympathetic system components in the retroperitoneal tissue. Such cases have been reported even by earlier writers such as Landau (1912), Wahl (1914) and Dunn (1914-15). Later cases were reported by Farber (1941) and Drake and Hellwig (1942) and more recently Andersen (1951) cited five more definite instances of extra-adrenal retroperitoneal sympathicoblastomas out of 24 analysed by her. These tumours can also arise from other sympathetic system components even in mediastinum or neck (Farber, 1941). He described a case arising from the organ of Zuckerkandl. Ewing (1940) observed a case arising from the femoral sympathetic plexus.

The microscopic appearances are characterised by the small size of the cell with a spherical or pyriform nucleus rich in chromatin and having a well defined nuclear membrane. The cytoplasm is clear and stains poorly, multinucleated giant cells may also be seen (Karsner, 1950). Delicate fibrils having argyrophil properties can be seen in between the cells. At places the fibrils may be "in clusters" with "tumour cells" surrounding them to form "pseudorosettes".

In these tumours, in certain areas, groups of cells of more mature and differentiated types may be present. In one area one may see sympathoblasts, in others mature ganglion cells (Karsner).

Metastases—Like any other tumour, these too can progress by direct extension and metastasise either by lymphatics or *via* blood stream. It was on the distribution of the lymphatics of right and left side that Pepper and Hutchinson types of syndromes were described. Ewing (1940) mentioned "Lungs were never involved in the tumours of the left side," but further experience does not warrant this assumption. The metastases are similar in appearance to the original tumour both on naked eye and microscopic examination (Karsner).

Summary

1. A case of sympathicogonioma arising from the right adrenal medulla has been described. The left adrenal was also involved but it could not be ascertained whether it was due to secondary spread or to bicentric origin of the tumour. The tumour was bulky, it weighed 3000 gm. All the abdominal viscera were adherent to it. Macroscopically the anatomical integrity of none of the neighbouring organs except the pancreas was violated. Although the aorta, inferior

vena cava and the duodenum were embedded inside the mass, their outlines were intact.

2. The tumour had formed metastases in nearly all the lymph glands of the mesentery, prepyloric lymph nodes and lymph nodes at the hilum of spleen. Few metastatic nodules were present in the liver mostly at the anterior margin.

3. Microscopically tumour cell emboli were seen in the perivascular lymphatics of the kidney and in the portal tracts of the liver. No tumour cells were seen in the vessels of any other organ.

4. The tumour consisted of undifferentiated sympathogonia with no attempt at differentiation into more mature type of cells.

Acknowledgment

We wish to express our thanks to Dr. R. S. Dixit, M.D., Civil Surgeon, Lucknow, for allowing us to study this interesting materials. We appreciate the technical help to us by our Senior Technician, Mr. Meraj Uddin.

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A STUDY OF CASES OF ENTERIC FEVER TREATED WITH CHLORAMPHENICOL

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Introduction

Attempts to discover a specific treatment for enteric fever had failed before. The discovery of sulpha drugs and the earlier antibiotics raised high hopes in the mind of the physician and of the public about some relief in the treatment of cases of enteric fever. Sulpha drugs and antibiotics discovered earlier have no specific action against the enteric group of organisms, but they are of some help in controlling secondary infections, thus reducing the mortality rate to some extent. In the absence of a better alternative, penicillin and sulpha drugs were tried in various hospitals and in private practice in an attempt to control the disease and some clinicians claimed good results with combined penicillin and sulphathiazole administration (Bigger, 1946; McSweeney, 1946). The discovery of chloramphenicol has however revolutionised the treatment of enteric group of fevers.

Since the introduction of chloramphenicol in the treatment of enteric fevers various reports from all over the world have appeared in the medical press showing its clinical effects and different types of side reactions (Bradley, 194; Briggs, 1950; Chatterjee and Basu Roy, 1950; Colquhoun and Weetch, 1950; Douglas, 1949; El Ramli, 1950a and 1950b; Malhotra, 1951; Patel and others, 1949; Shah, 1949; Stephens, 1950; Vakil, 1949; Woodward and others, 1950. In the beginning the cost of treatment was definitely prohibitive for routine use in our country. Although prices have come down to a great extent, it is still beyond the reach of poorer people and efforts should be made to bring down the price still lower to make this life saving drug more accessible to poorer people amongst whom the disease is more common.

Analysis of the Cases under Review

In this communication a review of cases of enteric fever treated in our hospital with chloramphenicol is made to study the effect of the drug in bringing down the temperature and in controlling the disease and also various reactions as noted during the course of treatment. In 1949 only a few cases were treated in our hospital with chloramphenicol. Since 1950 the supply of the drug was more regular and price began to come down. As such since then chloramphenicol was used in all cases of enteric fever who showed signs of toxæmia or any complication or in those cases where even in the absence of complications the temperature did not show any tendency towards defervescence after about a week in hospital. All cases diagnosed as enteric fever either clinically or by laboratory method and treated with chloramphenicol up to the end of June 1952 are included

in this review with the exception of two cases who were brought in with melæna and expired within 24 hours after admission—the total number of cases reviewed being 152. During the same period however more than 100 cases were diagnosed and treated as enteric fever without chloramphenicol.

The disease was found to be endemic throughout the year. However more cases were seen between May and September each year. Most of the patients included in this series were male adults as the accommodation for female patients and children is very limited in our hospital (Table 1). Mostly these patients were

TABLE 1—SHOWING CASES OF DIFFERENT AGE GROUPS

Age	Total No. of Cases	Male	Female
4 to 11 yrs. ...	8	5	3
12 to 25 yrs. ...	52	47	5
26 to 35 yrs. ...	71	68	3
above 35 yrs. ...	21	20	1

from amongst the labour class living in barracks and bustees—93 cases. Next in incidence were cases from amongst the lower middle class people—53 cases. Cases from well-to-do families were, however very few in number—6 cases.

The diagnosis could not be established in all cases by laboratory findings. Blood culture was done in some of the cases and this facility did not exist in our hospital earlier. Blood culture showed growth of *S. typhi* in 28 cases and to *S. paratyphi A* in one case. Stool and urine cultures were not done. Widal reaction was done in all cases, and a positive reaction up to a dilution of 1 in 50 in the absence of a previous history of T.A.B. inoculation was accepted as diagnostic provided that fitted in with the clinical picture of the case. In some cases the diagnosis had to be made entirely on clinical findings in the absence of confirmation by laboratory methods. A persistently negative Widal reaction up to the time of discharge of the patient from hospital was seen in some of the cases treated with chloramphenicol. Similar negative Widal reactions were seen in some cases with positive blood culture. Sometimes a fall in titre was seen in some cases with a previous positive Widal reaction in this series of cases treated with chloramphenicol. According to laboratory findings (blood culture or Widal reaction), 111 cases were found to be suffering from typhoid, 17 cases from paratyphoid A, and 5 cases from paratyphoid B infection and the remaining 19 cases were diagnosed on clinical findings only.

The clinical condition of the patients varied in different cases. Table 2 appended below shows some of the prominent clinical features of the patients before starting chloramphenicol therapy.

TABLE 2

Complications before Chloramphenicol	No. of Cases
Moderate toxæmia	101
Marked toxæmia	51
Marked tympanitis	37
Diarrhœa	68
Bronchopneumonia	17
Meningism	13
Melæna	5

TREATMENT

The day of disease of these cases at the time of admission in hospital varied between the 1st day to the 28th day and treatment with chloramphenicol was started as early as the 5th day and as late as the 28th day.

The dosage scheme of chloramphenicol was not the same in all cases. In the beginning a heavy loading dose with a two or three hourly maintenance dose was given (*Brit. M. J.*, 2: 918, 1949). Subsequently on account of vasomotor collapse in some cases a smaller loading dose with longer intervals, i.e., 4 hours or six hours was tried and found to be quite effective. In cases showing evidence of circulatory failure no loading dose was given in some with good results. In highly toxic cases showing evidence of gross circulatory failure chloramphenicol was given in still smaller doses without any initial loading. In all cases excepting where chloramphenicol had to be discontinued for some reason or other it was given for about seven to ten days after the temperature had come down to normal. The following dosage schemes were followed in principle. Slight occasional modifications were made in some cases.

Dosage Scheme I—2 to 3 gms. loading dose and maintenance dose of 0·5 gm. every three hours till temperature comes down to normal, then gradual increase of interval. (7 days in all). No. of cases treated—42.

Dosage Scheme II—1·5 to 2 gms. loading dose and a maintenance dose of 0·5 gm. every four hours till temperature comes down to normal, then gradual increase of interval (10 days in all). No. of cases treated—36.

Dosage Scheme III—1 gm. loading dose and a maintenance dose of 0·5 gm. every six hours till temperature comes down to normal, then 0·25 gm. every 6 hours for seven days. (12 to 14 days in all). No. of cases treated—74.

The average quantity of chloramphenicol used per patient in this series was about 13·1 gms. excluding those who died and excluding 8 cases of this series who were children below 12 years. The quantity per capita was 18 gms. or so in the beginning but nowadays with dosage scheme III we are using about 12 gms. per capita.

Vitamin B complex was given by mouth or by injections as a routine in all cases treated with chloramphenicol. A proper fluid balance was maintained in

all cases. General supportive and symptomatic treatment was given as and when required. A more or less liberal diet was given unless contra-indicated. Patients were allowed to be on their feet after about 7 to 10 days' afebrile period and were discharged from hospital when they could move about freely and were on ordinary diet.

Results

Response to different dosage schemes and different response according to treatment started in different weeks of disease are shown in Tables 3 and 4.

Table 3—Showing Response to Treatment Starting in Different Weeks

Week	Total Cases	Cases responding without complications	Response with complications
1st ...	25	21	4
2nd ...	91	71	20
3rd ...	26	12	14
4th ...	10	3	7

Table 4—Showing Response to Different Dosage Schemes

Time taken for Temp. to come to normal	Number of Cases Under Scheme I	Scheme II	Scheme III
12 hrs.	8	2	0
24 hrs.	26	16	18
48 hrs.	7	7	20
72 hrs.	1	5	24
96 hrs. or above ...	0	6	12
Total Cases ...	42	36	74
Complications			
Relapse	2	0	0
Vasomotor collapse ...	9	3	0
Other complications	12	8	11

With chloramphenicol there was a general improvement in the patients' condition with a feeling of well-being within 24 hours after administration with or without fall of temperature. There was a diversity of reactions as regards the fall of temperature (*Brit. M. J.*, 2: 918, 1949; Shah, 1949). In some cases the temperature came down by crisis (a sharp fall) while in others it came down slowly by lysis. The average time taken for the temperature to come down and to remain within normal limits was 53 hours.

Although the time taken for the control of the disease varied in different cases, no case resistant to chloramphenicol was met with in this series (Colquhoun and Weetch, 1950; El Ramli, 1950a; Malhotra, 1951). Typhoid and paratyphoid cases responded more or less equally well to chloramphenicol.

The average period of stay in hospital for patients treated with chloramphenicol was 22 days excluding those who died. The period of stay in hospital was prolonged in some of these cases due to conditions not connected with the original disease, e.g., one patient came in with left-sided basal pleurisy and was being treated for that. Diagnosis was established later and specific treatment was started as late as the 28th day. Another patient had a huge right-sided gluteal abscess which was operated upon in the hospital and had to stay in hospital for a long time for that condition.

Out of 152 cases treated with chloramphenicol there were 4 deaths—mortality rate 2·6 per cent.

Table 5

Sr. No.	Age	Day of illness on which chloramphenicol started.	Cause of death	Days chloramphenicol given
1	8	25	Severe toxæmia & hæmatemesis	5
2	10	12	Hæmatemesis, melæna, extensive hæmorrhages from mucous surface & under the skin	9
3	28	19	Intestinal perforation (operated)	8
4	26	15	Repeated melæna	8

A high relapse rate after chloramphenicol therapy has been observed by many and some have also reported poor response to chloramphenicol during relapse (Briggs, 1950; El Ramli, 1950b; Malhotra, 1951; Smadel and others, 1951). The relapse rate in this series of cases treated with chloramphenicol is however remarkably low. There were only two cases of relapse and both of them responded for the second time also with chloramphenicol. Each of them had 18 gms. chloramphenicol in the first occasion and 15 gms. in the second occasion. There were however five cases amongst this series where chloramphenicol therapy was started for the first time during relapse.

Complications

Although varying degrees of nausea and occasional vomiting was seen in a number of cases treated with chloramphenicol, vomiting as a marked feature was encountered with in only one case. Glossitis and stomatitis were practically absent in all.

Diarrhœa after the institution of chloramphenicol therapy was seen in 18 cases. On the other hand there were several cases where a definite improvement was seen in pre-existing diarrhœic and tympanitic condition. The stool in cases of diarrhœa after chloramphenicol did not show any exudates and showed plenty of bacteria and sometimes fungi and yeast cells. White stools as noted by some clinicians were not observed in any one of the series.

Retention of urine was observed in 13 cases of this series. This number includes only those cases where

there was no retention of urine before but occurred after temperature came down or after general improvement. All these cases had to be catheterised several times and normal micturition started after 2 or 3 days in them.

Mental imbalance or marked mental apathy was seen in seven cases of this series after temperature had come down to normal with chloramphenicol. All these cases recovered in about 7 to 10 days' time.

Coarse tremors of the extremities were observed in two cases during afebrile period after chloramphenicol (Briggs, 1950). They disappeared 2 to 3 days after discontinuation of the drug.

Epileptiform convulsions were observed in one case after chloramphenicol. No previous history of any similar occurrence was obtained and no recurrence was reported till about 6 months after discharge from hospital.

In one case of this series marked muscular weakness of both the upper extremities was seen after chloramphenicol therapy. A similar complication was also seen on another occasion in a case of typhus fever treated with chloramphenicol in our hospital. No definite cause could be ascertained for this condition and both of them recovered after about 2 to 3 months' time.

Vasomotor collapse was seen after chloramphenicol in twelve cases in this series (Chatterjee and Basu Roy, 1950; Stephens, 1950). None of these cases was however proved to be fatal and they recovered with usual supportive treatment along with discontinuation of the drug. The principal clinical features on such an occasion was a sharp fall of temperature to subnormal along with profuse perspiration, cold and clammy extremities and low blood pressure. No pulse could be felt at the wrist for several hours together in some while in others where there was a very feeble pulse—the systolic blood pressure varied between 45 to 70 mm. of Hg. This condition lasted for about 48 to 72 hours and recovery was gradual. Subsequent recovery was uneventful and without relapse in spite of discontinuation of chloramphenicol.

Purpuric hæmorrhages all over the body and extensive ecchymotic patches were seen in one case after chloramphenicol where there was hæmatemesis and melæna as well. This patient, a boy aged 10 years, was admitted on the 12th day of disease in a toxic condition. His blood culture was positive to *S. typhi*. He had a total of 11 gms. chloramphenicol in 9 days. His temperature came down to normal in 48 hours but he continued to be dull and apathetic. Petechial hæmorrhagic spots appeared on the last day of administration of chloramphenicol, first on the trunk which gradually became larger and more conglomerated. Then areas of bleeding of different sizes under the skin appeared simultaneously with bleeding from the nostrils, lips and gums. He then had melæna and hæmatemesis and expired five days after the first appearance of petechial hæmorrhage. He was treated with large doses of vitamin C and vitamin K and blood transfusion.

Hæmatemesis occurred in another case, a child aged 8 yrs.

Melæna was seen starting after the institution of chloramphenicol therapy in four cases. Chloramphenicol was given and continued in the presence of melæna in five cases of this series with good result.

Intestinal perforation was seen in one case after chloramphenicol who succumbed after operation.

Granulopenia after chloramphenicol was not observed in any case of this series.

Conclusion

From a study of this series of cases we find that chloramphenicol is effective in all stages of the disease and justifies its position as a life-saving drug in the treatment of enteric fever. However, to get the full benefit of the drug it should be used as early as possible, and proper watch should be kept for the usual complications of enteric fever. Toxic manifestations as noted in this series were not dangerous althouh in the event of a vasomotor collapse there was always an apprehension. The case of the child described before, who died of extensive hæmorrhages all over the body and its close similarity to the recently reported cases of fatal aplastic anæmia following chloramphenicol therapy deserve attention, so that we may be more careful in treating children with chloramphenicol (*Brit. M. J.*, 2: 152, 1952; Smiley *et al*, 1952).

In general in an average adult the following dosage scheme was found to be most effective—1 gm. to start with and a six hourly maintenance dose of 0·5 gm. till the temperature came down and a subsequent 6 hourly maintenance dose of 0·25 gm. for about 7 days.

The average period of stay in hospital for patients treated with chloramphenicol was definitely much less than that in a group of selected cases of enteric fever of similar toxicity treated in our hospital before the days of chloramphenicol. If we calculate the usual expenditure per patient per day in hospital, I am sure, the total expenditure per patient with and without chloramphenicol will not vary widely.

Summary

152 cases of enteric fever treated with chloramphenicol in our hospital have been reviewed.

Results of treatment and various side reactions observed during treatment have been described.

Chloramphenicol has been found to be effective practically in all stages of the disease. An earlier institution of this therapy is however advocated in order to get the maximum benefit by avoiding complications and by curtailing the period of suffering.

Acknowledgment

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PRACTITIONERS' CORNER

SALT DEPLETION

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Introduction

Knowledge about salt depletion is a recent development of medicine. Before World War II all cases of dehydration were attributed to loss of water (water depletion) from the body and treatment was directed to supplement this loss. Naturally, cases of dehydration not due to water-depletion but due to pure salt depletion reacted adversely to this treatment.

Physiological Considerations

Sodium chloride is an essential constituent of body fluids. It helps to maintain the normal osmotic pressure of blood, regulates normal water balance and distribution in the system. It is one of the buffer salts, that regulates acid-base equilibrium in the body. Osmotic isotonicity of the tissue fluid is perhaps the most important of all the properties in regard to which constancy is required by the cells. In the osmotic equilibrium between the intracellular and tissue fluid it is the electrolyte ions which play the chief part. In the cell fluid it is the K and PO_4 while in the tissue fluid it is the Na and the HCO_3 ions that determine the level of osmotic pressure in the respective fluids. Plasma volume is also maintained at constant level by the oscillation of fluids from the plasma to the intercellular spaces or back depending upon the levels of hydrostatic pressure and plasma-protein—osmotic pressure in the capillaries. In normal health an accurate balance is struck between the two pressures. The capillary and cell membranes are freely permeable to water. The former is also permeable to the electrolyte ions of the extracellular fluids, i.e., Na, Cl and HCO_3 but confines the proteins in the vascular compartments while the cell membrane is relatively impermeable to the chief electrolyte ion, i.e., Na ion. In salt depletion the extracellular fluid becomes hypotonic from the loss of Na and Cl ions. The kidney in its attempt to maintain the isotonicity of the tissue fluid excretes water even though the plasma-volume and extracellular fluids are diminished. The reduction in volume is relatively greater in the tissue fluid than in the plasma as decrease in hydrostatic pressure and an increase in plasma-protein pressure result in withdrawal of some tissue fluid into the capillaries but even this shift of tissue fluid into the vascular compartment is insufficient to prevent marked fall in plasma volume. The chief effect of salt depletion is therefore a state of "extracellular dehydration".

Causes of Salt Depletion

The causes of salt depletion can be grouped under three main heads:

(1) Abnormal loss of NaCl with little intake of NaCl as seen in cases of long continued vomiting and diarrhœa resulting from various causes. Vomiting causes great relative depletion of chloride ions and the well known tendency to alkalosis while diarrhœa has the reverse effect with disproportionate loss of Na and a tendency to acidosis.

(2) Drinking of too much in presence of great loss of Na as seen in heat exhaustion and heat cramps.

(3) Therapeutic continuous aspiration of gastric or intestinal contents without parallel administration of salines.

Signs and Symptoms

(1) Dehydration—It is due to depletion of plasma and extracellular fluids. Subcutaneous desiccation appears resulting in sunken eyes and high cheek bones and the expression may sometimes resemble Hippocratic facies. The skin loses its elasticity.

(2) Lassitude, apathy, stupor which are usually seen in heat exhaustion in the tropics and in sprue.

(3) Muscular weakness as is so important in Addison's disease.

(4) Headache—On account of lowered B. P. a low pressure headache sets in which is more pronounced

when the patient assumes an erect posture and is partially relieved when the patient lies down.

(5) Orthostatic giddiness and fainting fits—These are the most characteristic symptoms. The effect of standing is dramatic. The pulse becomes feeble, the blood pressure falls rapidly, the patient becomes increasingly pale and goes to the verge of syncope. In fact if the oligæmia is severe the patients are in danger of sudden death from changes of posture.

(6) Anorexia—diminished intake of food—nausea and vomiting—further loss of NaCl—a vicious circle is thus established.

(7) Loss of weight becomes evident in the later stages.

(8) Cramps are especially noticeable in people whose occupation keeps them exposed to constant heat as in stokers and firemen.

(9) Mental confusion and delusion—When severe may be mistaken for psychoneurosis or even madness.

Diagnosis

In any person coming with a history of persistent vomiting or long standing diarrhœa and presenting a dehydrated appearance but not complaining of any excessive thirst or diminished urination and suffering from severe orthostatic giddiness salt depletion should be suspected. The diagnosis can be established by a simple test named after its originator Fantus. It consists in adding drop by drop a 2·9 per cent silver nitrate solution to a test tube containing 10 drops of patient's urine to which one drop of 20 per cent potassium chromate solution has been added. The end point is indicated by a thick brown precipitation appearing in place of the yellow transparent solution. In normal individuals the precipitation appears after five drops of $AgNO_3$ solution have been added while in salt depletion it appears anywhere between one to five drops depending upon the severity of the case. Blood urea is increased and B.P. is greatly lowered. Electrocardiography may show depression of ST segment but the degree of depression bears no correlation with the severity of salt depletion.

Differential Diagnosis

The dehydration due to pure salt depletion has been constantly mistaken for water depletion. If it is remembered that in salt depletion there is no thirst as contrasted with the severe thirst occurring in water depletion this mistake will not be made. In doubt Fantus' test will help to establish the diagnosis.

The syndrome of headache, vomiting, giddiness and fainting fits have been mistaken as due to increased I.C.T. whether as a result of a neoplasm or an inflammatory condition or a vascular upset. Absence of fundal changes, normal appearance of the radiogram of the skull and normal C.S.F. will indicate the diagnosis.

Uræmia due to renal damage may be suspected owing to increased blood urea concentration and hypertonic glucose given parenterally. This procedure will further increase tissue dehydration. The condition can be excluded by noting absence of any history pointing to renal damage, absence of retinal changes characteristic of renal damage, the existence of low B.P. and almost a normal urine except for low NaCl content.

Treatment

The patient should be immediately put into bed and attempt made to replace the lost NaCl. It is remarkable how quickly the symptoms of orthostatic giddiness, nausea and vomiting disappear and an amelioration in the general condition of the patient sets in. It is better if the saline is given by continuous drip, the rate depending upon the degree of the salt depletion. Oedema lung may supervene if the fluid is pushed in too quickly especially when the heart is in an atonic state. The patient should never be given plain water to drink, instead sufficient quantity of saturated and salt solution can be given orally to supplement the parenteral saline. But too much of salt solution orally may increase the existent nausea and vomiting. If salt depletion is due to increased excretion in urine as in Addison's disease, suprarenal cortical extract in adequate doses should be given intramuscularly. I usually give 20 units of Eschatin or 5 mgm. of Percorten daily, intramuscularly, till the condition improves as indicated by a negative Fantus' test.

There are two schools of thought regarding the procedure to be adopted to replace the lost NaCl. Rogers and his followers use hypertonic saline and claim the following advantages for their method. With hypertonic saline a large quantity of the salt is thrown into circulation in a short time. The specific gravity of blood is increased in salt depletion and this blood is isotonic with hypertonic saline introduced. If there is a draw of tissue fluid to bring about isotonicity in the vascular and extracellular bed soon readjustment will take place once the hypertonic solution in the capillaries become isotonic. The drawback of this method is the occurrence of severe headache after the infusion of especially a 20 per cent solution. Sellard and his followers advocate infusion of normal saline and claim as good results as those of Roger's school. The advantages claimed are replacement of body fluids quickly with absence of diuresis. The disadvantages are onset of pulmonary œdema in weak hearts and water intoxication with œdema of the brain if the kidneys do not work synchronously with the administration of saline solution. Marriott advocates isotonic saline till symptoms are relieved and hypotonic (N/2) saline till the salt balance is completely restored. He opines that in children 1/4 or 1/5 isotonic solution is advisable as the kidneys cannot cope with any excessive salt thrown on them for excretion. Hypertonic salines are used in following strengths: 1/3 to 3 per cent, one litre every 8 hours by continuous drip has been found in my experience a suitable quantity. The rate of administration depends upon the severity of the

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case one litre being administered in about 30 minutes in severe depletion and in two hours in moderate depletion. In children where it is difficult to get the veins, especially, as the desiccation will result in collapse of the veins, Nanth-Miser advocates transnasal intragastric drip with a Ryle's tube. I have no experience of this method. Patients who have hypoproteinæmic œdema are not suitable patients as capillary permeability is increased in these individuals and sometimes kidneys are also damaged. Careful watch for signs of water-intoxication or pulmonary œdema should be maintained while giving parenteral fluids.

Illustrative Cases

Case 1—Persistent vomiting giving rise to salt depletion: Laxamamma, aged 45 years, was referred to me on 15-8-52 as a probable case of intracranial neoplasm. She gave a history of persistent vomiting for past two months and had been confined to bed with severe frontal headache (which would increase if she even sat up in her bed) and severe orthostatic giddiness. She was unable even to retain milk of late and was becoming rapidly weak. Her periods had been irregular for some time past. She had been treated at her place near Hyderabad and at Ananthapur at her brother's place without any improvement.

On examination she appeared very much disiccated and her face resembled facies hippocratica. Her abdomen was indrawn and did not present any signs of peritonitis. The C. N. S. did not show any abnormality except slight internal ear deafness in the right ear. There was no sign of involvement of the cerebellum and co-ordination was perfect, the cardiovascular system was normal except for low B.P. (115/78), respiratory and digestive systems were normal. As for the cutaneous system she had advanced cancer of the left breast. Fundal examination was normal, C.S.F. was clear and showed normal biochemistry with normal pressure, cytology, glucose, chloride and protein content and no cobweb formed on standing for 24 hrs. Blood showed mild hypochromic microcytic anæmia and W.R. was negative. Blood urea concentration was 52 mgm. per cent. Urine was clear with a specific gravity of 1010 and had no albumin, sugar or microscopic deposits. Fantus' test showed hypochlorræmia as brown coloration appeared at the 4th drop. Radiogram of the skull did not show any evidence of increased I.C.T. but secondary deposits were present at the parietal bones. Radiograms of the chest, vertebral column and pelvis showed a few secondary deposits in the ribs and iliac bones.

Assuming a diagnosis of salt depletion she was put on parenteral saline. First she was put on 50 c.c. of a 10 per cent solution twice a day, for two days. Her nausea and vomiting improved as well as the dehydration. B. P. increased but her orthostatic giddiness and headache began to improve only from the third day and she was for the first time able to sit in her bed and take some liquid feeds and retain them. She was now put on Eschatin 20 units per day. She appeared to be making a gradual recovery but died suddenly on 30-8-52 at 5 a.m., the nurse reporting that she tried to sit up in her bed and had called for help and before the nurse came near her cot she had fallen down dead. A diagnosis of nausea and vomiting setting in as a manifestation of a menopausal state resulting in a state of salt depletion made worse by parenteral glucose with death due to peripheral failure has been presumed. The presence of secondaries in the skull had not resulted in any increased I.C.T. A barium meal investigation was arranged and before this investigation could be done the patient had died. Absence of involvement of the stomach in a malignant process had been presumed as there was no history of abdominal discomfort nor was there any mass palpable on the abdomen clinically. The uterus was also normal.

Case 2—Salt depletion resulting from longstanding diarrhœa: Gopala Rao, aged 60 years, was carried on a stretcher into the wards. He was not in a condition to give any history but his son who accompanied him told us that his father was employed at Bombay and had been sick for the past one year. He had been diagnosed as a case of nutritional anæmia and had been given a number of liver and folic acid and B_{12} injections without much improvement in his blood condition. As he become acutely sick one and a half months ago he was brought over to his native place (Mysore) from where the patient was brought to Victoria Hospital on 20-8-52 as the patient became gradually unconscious.

At the time of admission the patient was in a stuporous state. There were no signs of coma but of profound acidosis. Patient was desiccated, tongue was raw-looking at the edges and coated in the centre, lips appeared reddish on the inside and there were a few fissures at the angles of the mouth. Pulse was rapid and feeble. Respirations were shallow and rapid. Skin was dry and inelastic. Abdomen was retracted inwards. There was slight pitting œdema at the ankles and the soles of the feet were peeling off. Slight basal congestion of the lungs was in evidence and the cardiovascular system did not present any abnormality except low B.P. (90/65). The C.N.S. was quite normal. Blood picture showed advanced hypochromic microcytic anæmia with 3 million R.B.C. and Hb. 50 per cent while W.B.C. count was 7000. Urine and fæces did not present any abnormality. Blood urea was 50 mgm. per cent. C.S.F. was clear and had normal biochemistry. Fantus' test was positive with coloration appearing at the 3rd drop. The patient was immediately put on Plasmosan (M. & B.) and I. V. saline 10 per cent, 50 c.c. once daily. Sulphaguanidine tablets were displayed orally, 8 tablets to start with and 2 tablets six hourly. The patient made a remarkable recovery. He was walking about after a week's treatment and we were arranging to have a F.T.M. and barium meal investigation done to find out the cause of his longstanding diarrhœa.

Conclusion

It will thus be seen that salt depletion is of fairly frequent occurrence and is usually mistaken for water depletion and made worse by wrong treatment. Recognition of the condition by the simple application of Fantus' test and institution of supplemental therapy with saline will result in the saving of many lives which otherwise would end in death. Marriott rightly observed "Water and salt are, perhaps, practically the most important substances, it is in our power to administer. They can be so used that they can achieve seeming miracles or they can be so misused as to lead to a fatal issue. Their proper use is not the simple matter

it is often assumed to be. The true approach to understanding is one of humility."*

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* Since dehydration may be due either to water deficiency or salt deficiency, if saline is administered, as is often done in patients specially children suffering from dehydration following acute diarrhœa, where water rather than salt depletion is the predominating feature, saline will make the cells more anhydræmic because more water is sucked out of the already depleted cells and the kidneys are unable to transport sufficient salt into the urine to handle the excess. If diuresis follows more fluid will be lost and the intracellular dehydration may become worse.

Glucose solution is often used in dehydration and cases have been recorded of death or collapse following its use specially in children. In dehydration due to salt depletion glucose increases excretion of fluid by the kidneys carrying with it enough additional salt to produce salt depletion shock.—ED., *J. Indian M. A.*

SPECIAL ARTICLE

POST-GRADUATE EDUCATION IN INDIA IN MEDICAL SCIENCE

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Medicine is a growing science. Every country, therefore, has to move with the speed of its growth if she wants to be a sharer in its development. We have been sending our students to foreign countries with a desire, primarily to see that such students come home to aid the sick with improved methods of treatment.

We have no regular post-graduate instruction excepting in the few diplomas lately introduced and University degrees principally M.D. (doctor of medicine) and M.S. (master of surgery).

It is now the time for us to organise post-graduate degrees, diplomas and training in our country in the right line with two views:

(*a*) To send some of such qualified post-graduate students to foreign countries to work under specialists in their respective field of specialities, instead of students going for degrees as at present.

(*b*) To help teachers who would take up post-graduate teaching to run abreast with the latest progress in the medical science.

As I have mentioned above the two principal degrees existing in India are M.D. and M.S. These two degrees have been started after similar degrees called M.D. and Ch.M. given in United Kingdom. M.D. signifies doctorate in medicine whereas Ch. M. stands for master in surgery. The requirements[1] for these two degrees include—

1. Theoretical examination.
2. Practical and oral examination.
3. Thesis.

Let me present the form of post-graduate instruction existing in some other countries.

United Kingdom[2]—She has master and doctorate degrees offered in every basic medical subject like anatomy, physiology, biochemistry, pathology, pharmacology, etc. The Ph.D. is also awarded in some of the clinical medical subjects and their specialities. She also has M.D. and Ch.M. (latter called M.S. here) in the clinical subjects and their specialities.

Since M.D. and M.S. have been adopted in Indian Universities as degrees of choice for clinical subjects, I would present below their position in some of the noted universities of United Kingdom.

London—The new regulation will take effect in July, 1953. It seeks to divide the examination into two parts. Part I is open to M.B.s of two years' standing, consists of papers on medicine and pathology, an essay, a clinical examination, and an oral examination. Part II is open to M.B.s of five years' standing, consists of a thesis "dealing with general medicine or with some special branch of medicine" and an oral examination on general medicine and on the special subject dealt with in the thesis. Candidates who have held appointments for two years at recognized institutions—hospitals or medical schools, in London or elsewhere—may be exempted from Part I and the oral examination in Part II is at the discretion of the examiners.

POSITION OF CH. M.

Birmingham—Requirements are the same as for M.D. both under the old and new regulations.

London—The new regulations come into effect in July 1953 and are identical in form with the new regulations for M.D. The M.S. examination is divided into two parts. Part I is open to M.B.s of two years' standing, consists of papers on Surgery with Surgical Pathology and on Surgical Anatomy with Applied Physiology, an essay, clinical examination, an examination in "methods of surgical approach and the conduct of operations" and an oral examination. Part II is open to M.B.s of 5 years' standing, consists of a thesis "dealing with surgery or with some special branch of surgery" and an oral examination on general surgery and on the special subject dealt with in the thesis. Every candidate is also required to submit a record of his surgical experience. Exemption from Part I and from the oral examination in Part II may be granted for the same reason as the corresponding M.D. examination.

[1] University Regulations of the different Indian Universities which give M.S. and M.D.

[2] RAYMOND, WHITEHEAD—The future of the M.D. and Ch.M., *Brit. M. J.*, 2: 468, 1948.

POSITION OF M.D. UNDER THE OLD AND NEW REGULATIONS

Name of the Universities	Old Regulations			New Regulations		
	TIME*	EXAMINATION	THESIS REQUIREMENT	TIME*	EXAMINATION	THESIS REQUIREMENT
Birmingham (New regulation in force since 1950)	2 years	Oral examination appropriate to the subject matter of the thesis unless exempted for having presented a thesis of "sufficient merit"	A thesis based on original research or on the application of scientific method to medicine	5 years	Routine examination is abolished; candidate may have to submit for an oral examination if necessary	A thesis which must be a substantial contribution to medical knowledge and must contain original work worthy of publication.
Edinburgh (New regulation in force since 1950)	1 year	Clinical medicine, with or without a special subject, and exemption from the examination (or part of it) was granted only in "special circumstances" and if the thesis was of "exceptional merit"	Thesis	2 years	May have examination in the branch of medicine in which the subject of the thesis falls	Thesis—it may form the only test

* Time between M.B., B.S. and M.D.

According to the new regulations affecting also the other universities of United Kingdom namely Oxford, Cambridge, Manchester, Wales, Leeds, etc., it appears that there is now a tendency (*a*) to attach more importance to research and less to the usual examinations as qualifications for M.D. and Ch.M. (*b*) to require candidates to be practitioners of considerably greater experience usually 5 years and (*c*) to prescribe the same formal requirements for both M.D. and Ch.M., thus removing the difference in the status between these two degrees. Since the new requirements for Ch.M. are of the same standard as M.D. appropriate awards according to some is suggested to be Doctor of Surgery and not Mastery of Surgery.

United States of America—There are only a very few post-graduate schools of medicine (called there Graduate Schools of Medicine). One of them, the first to be established in U.S.A. was in the University of Pennsylvania[3].

The post-graduate degrees[4] (called also graduate degrees) are master degrees and doctorate degrees and are offered in all the different branches of medicine. They have thus the same type of post-graduate degrees in each subject, viz., master and doctorate. The former is an examination *cum* research degree and the latter, purely a research degree. The under-graduate degree in U.S.A. and also in the continent is named M.D. which just entitles the graduate to be called a Doctor by right and not by courtesy. The M.D. degree there corresponds to our M.B., B.S. and should not be mistaken for the post-graduate degree, although the admission requirement to a medical school is at least 3 years of college training and in some Bachelor's degree.

[3] Bulletin—Graduate School of Medicine and Graduate School of Arts and Sciences, University of Pennsylvania, Philadelphia.

[4] Description of studies in the different subjects, Graduate School of Medicine, University of Pennsylvania, Philadelphia.

DISCUSSION

Doctorate degrees—Analysing now the position of the post-graduate degrees of the different countries, one finds that there is now a tendency to include a good thesis as the principal criterion for the award of doctorate degree variously named, e.g., D.Sc., Ph.D., M.D., M.S., etc. There are in some places an oral examination also, but this is limited only to the subject of the thesis. Therefore, a good thesis and an oral examination on the subject matter of the thesis, if necessary, may be considered sufficient for the award of the doctorate degree, in all the different branches of medicine. This will be in line with similar degrees in arts and other science subjects.

In the naming of such a degree, there is no unanimity, although every body wishes to level them to the doctorate standard. In our country M.D. and M.S. which have been adopted as post-graduate degrees of choice in clinical subjects include, apart from the thesis, also examinations as mentioned before. No attempt has been made to demand a doctorate standard of thesis as the basic requirement of the degree. Examinations are considered more important. Further, these degrees were also awarded in the various basic medical science subjects. Thus, the basic science subjects, besides M.D. and M.S. could have also Ph.D. How then can one attempt to fight over these confusions? If it is felt by the universities in India that M.D. and M.S. should also be levelled to the doctorate standard and be placed at par with those of the British universities from where they were copied, they need also change the regulations and consider good thesis

with oral examination when necessary, to be sufficient for the award of these degrees.

In the naming of the doctorate degree in surgery, attention has been aroused in United Kingdom with the change in the regulations, where both M.D. and M.S. are now fitted as research degrees. There is a suggestion to call it D.S. or to give it such other name which may signify doctorate in surgery.

It will be nice to give one common name to all the doctorate degrees in the different subjects of medicine. Names like M.D. (doctor of medicine), D.S. (doctorate of surgery), D.O. (doctor of ophthalmology), etc., may be quite fittting but one has to coin a long list of such names to fit in with all the subjects. A common name may be quite simple like D.Sc. (X) or Ph.D. (X) where "X" stands for the subject in which doctorate is conferred.

As for the time between M.B., B.S. and doctorate degrees, it can be increased to a minimum period of 5 years. This period should include at least two years of work in the subject in which degree is sought. The general adoption of the five years minimum, would substantially improve the status of the degree and the thesis would reach the quality of the doctorate standard. Thus, the candidates would be doctors in fact and also in name. Besides, their work for a good thesis will act as nucleus for pushing research work in all the institutions of India.

There is now a tendency to introduce also in India, an opening to non-medical men in the basic medical subjects. This is after what has happened in the rest of the world, where basic medical subjects are also linked with the general science subjects. It is true that such non-medical men are very talented research scholars, but I am yet not competent to say that they are equally good as teachers to medical students who need more applied form of training for being successful practitioners.

It is in the fitness of the present trend to suggest that doctorate degree be termed D.Sc. to be given in all medical subjects and open to those who are medical men only, and Ph.D. to be given only in basic science subjects and open to non-medical men.

Master degree and diplomas—When the requirements for M.D. and M.S. are regularised to thesis only to fit them to be placed on the doctorate standard, it becomes necessary to have an award based on examination. As for the requirements of such awards, U.K. and U.S.A.[4] both agree, that they need include:

(*a*) Comprehensive courses on basic medical science subjects, viz., anatomy, physiology, biochemistry, pathology (including bacteriology and parasitology) and pharmacology. This course should be compulsory to all studying in the different branches of medical subjects. I learn similar courses of study are being organised in England[5] with the joint efforts of Post-graduate Medical Federation and Royal Colleges.

(*b*) Lectures, demonstrations, clinical and laboratory teachings in different medical subjects or their specialities in which the candidate offers for post-graduate instructions.

A point of disagreement may arise here also in the naming of such awards.

In U.S.A. there is a master degree in all the different branches of medicine and their specialities given by the few graduate schools of medicine existing there. Diplomas are few and also controlled by the boards or colleges with parentage in A.M.A. (central control).

In England, to my knowledge, there are master degrees imparted only in the basic medical science subjects but diplomas exist in all the other medical subjects even in some of the basic medical subjects, i.e., D.Path. or D.Bact., etc. These diplomas in the United Kingdom are given by the three colleges (*viz.*, colleges of physician, surgeons, obstetrics and gynæcologists), conjoint boards, corporations, etc., and also by a few universities.

We have no colleges of physicians, surgeons, etc., in India. We have however the I.M.A. and I.M.C. Will it be right for us to introduce diploma award also in the different universities of India independently or split up such examination awards into degrees and diplomas? Degrees may be made the concern of the universities. They may be termed as master degrees and can be given in all different medical subjects. As for the requirements they can be based on examination only or making them more academic, on examination and research both.

Diplomas are to be started on an all-India basis with their parentage in I.M.A. or I.M.C. or any other central body to maintain a uniform level of standard. Now that we are having associations, founded on all-India basis in different branches of medical science, they all can have central affiliation to I M.A. or I.M.C. or any central organisation. Let such a central organisation introduce diplomas in different branches of medicine. Their training, however, can be incorporated with different universities and all-India specialist institutes.

Post-graduate training—In the United States[6] the Council on Medical Education and Hospitals (a part of the A.M.A.) publishes semi-annually the lists of post-graduate courses. These courses vary in length from a few days to one year or even longer and include a wide variety of fields in clinical medicine and in the basic sciences. The medical schools, the state and county medical societies, hospitals, state and city boards

[5] Post-graduate Education in London and outside London:—*Brit. M. J.*, 2: 484, 1951.

[6] Anderson, G., Manlove Francis, R., and Tipper Anne—Medical Education in the United States and Canada, *J.A.M.A.*, 147: 156, 1951.

of health and special societies all take prominent part in presenting the training. In India such post-graduate training could be arranged in the medical colleges, all-India specialist institutes and state specialised hospitals. When giving such training it is important to see that students are given also a clear background of the basic subjects connected with their fields of specialities.

SUMMARY

It is suggested, therefore, to start two types of post-graduate awards, viz., (*i*) doctorate which will help in the promotion of research and (*ii*) the master degree and diplomas—which will be particularly intended to produce specialists and specialist practitioners. Master degrees are to be introduced by the universities while diplomas may be started and controlled by some central organisation. Doctorate and master degrees may be started in all the different branches of medical science and be named D.Sc. (or Ph.D.) and M.Sc., respectively, to bring it at par with similar degrees in other subjects. Short refresher courses for the medical practitioners and also for the general medical service men can be organized in the different medical colleges, all-India medical institutes and specialised hospitals.

CASE NOTE

ACTH IN PSORIASIS

A Case Report

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Several reports appeared since 1949 regarding the beneficial action of cortisone and corticotropin hormone (ACTH) in effecting symptomatic remissions of longer or shorter duration of acute disseminated lupus erythematosus, scleroderma, dermatomyositis, periarteritis nodosa, allergic skin condition, hypersensitivity, disease like severe penicillin reaction or contact dermatitis and other skin diseases. Reports regarding the value of ACTH in the treatment of psoriasis are not many. Hench *et al* (1950) reported some improvement in the skin lesions of psoriasis with ACTH. Wolfson and his associates (1950) recorded good response to corticotropin in a patient with gout and psoriasis. O'Leary and his co-workers (1950) observed severe arthropathic psoriasis responding better to corticotropin than cortisone. Irons *et al* (1951) concluded that chronic psoriasis may respond to corticotropin but not to cortisone. Steiner and Lawrence (1952) by treating 8 cases of psoriasis with cortisone recorded partial improvement in only 2 patients. The total dosage employed by them was in the region of 2425 to 3450 mgm. They were emphatic in that ACTH is of little value in psoriasis, particularly in large, coalescent and infiltrated plaques of long standing nature. Hopkins and his co-workers (1952) treated two cases of psoriasis, one with cortisone and the other with corticotropin. It was observed that though both the cases responded, the case treated with cortisone reacted in a better way than one with corticotropin.

It is observed from the above that the therapeutic results of ACTH and cortisone in psoriasis are not uniform and in the selective cases ACTH does produce symptomatic remissions. Below is recorded the case report of a patient with psoriasis benefited by ACTH.

CASE REPORT

B. G. R., male, aged 35 years was admitted to the skin clinic of King George Hospital, Visakhapatnam on 30-7-51 for treatment of psoriasis of 6 months' duration.

Condition on admission—Scaly, circinate and exfoliative psoriatic lesions involving the skin of most of the body were seen. These lesions were well marked on the face. The skin over the trunk, scalp, face and extremities was leathery, dry and exfoliating.

Blood Wassermann and Kahn tests were negative. No improvement was observed a month after treatment with 8 per cent acid salicylic applications and autohæmotherapy. 12 injections of collosol mercuric sulphide 2 c.c. each, given every third day, did not benefit him. After this treatment the lesions were erythematous and the patient was desquamating scales in huge quantity (half a pound in weight of scales daily). Treatment by various drugs showed no abatement of the lesions. He suffered from infective hepatitis from January '52 to March '52 while still in the hospital.

A year after admission to the hospital (17-7-52) the patient's condition remained as before (Fig. 1).

Blood Chemistry: Serum calcium—10 mgm. %
Serum proteins—total 5·8 gm.
Serum albumin 2·4 gm.
Serum globulin 3·4 gm.

Blood eosinophils 36 per cent.

Weight 100 lbs.

Treatment with ACTH—The patient was given daily intramuscular injections of 51 mgm. of ACTH from 17-7-52 to 23-7-52 and on a reduced dosage of 34·5 mgm. a day from 24-7-52 to 3-8-52 up to a total dosage of 750 mgm. He was on restricted salt and fluid diet. A week after he was on ACTH, marked regression in the lesions and considerable reduction in the amount of scales shed were observed. This was associated with symptomatic relief and the patient expressed with relief that he was a different person (Fig. 2). The remission was paralleled by an immediate fall in blood

FIG. 1—SHOWING TYPICAL LESIONS OF PSORIASIS ALL OVER THE FACE AND NECK BEFORE TREATMENT WITH ACTH

FIG. 2—SHOWING TOTAL DISAPPEARANCE OF LESIONS OF PSORIASIS OVER THE FACE AND NECK. THE SKIN IS SMOOTH

eosinophils to 22 per cent, the patient now weighed 120 lbs. and is extremely cheerful. He was free from the complications that are commonly ascribed to cortisone or ACTH. Slight fullness of the face was observed on the 7th day of treatment which subsided soon after enforcing further restrictions in fluid and salt intake.

COMMENT

The patient showed rapid improvement even at the reduced dosage of 750 mgm. It is three months since he was put on ACTH and has so far showed no relapse. None can forecast when a relapse would set in.

The mechanism of action of ACTH and cortisone is not well understood. Dougerty (1945) recorded cellular infiltration in mild allergic inflammatory reaction in sensitised mice which was diminished by pretreatment with cortisone and he had interpreted this effect as indicating that cortisone inhibits allergic inflammation through an antiphlogistic action.

SUMMARY

1. A case report of psoriasis treated with ACTH is recorded. While the patient was refractory to the usual therapy of psoriasis, a rapid remission with complete relief of symptoms and remarkable regression in the lesions were observed even with 750 mgm. of ACTH.

ACKNOWLEDGMENT

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ADDENDUM—Seven months after the course of ACTH therapy the patient has had no relapse and the skin is completely free from psoriatic lesions and presents the appearances of normal skin.

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ANTIBIOTICS IN CHOLERA

The spectacular success achieved with chemotherapeutic agents and with antibiotics in many serious infections led some workers to try them in cases of cholera. The initial results with sulphonamides were conflicting, some claiming favourable results with regard to mortality and reduction in the duration of excretion of vibrios. It seems, however, that many are agreed that this group of drugs is not of value in any of these respects. Carruthers[1] and Lahiri [2] found that the sulpha group of drugs had not fulfilled original expectations. On the contrary harmful effects have been attributed to them[3]. It is probably agreed now that the sulpha group of drugs is not of definite benefit in cases of cholera.

The antibiotics came next into the picture. There was, in addition, some experimental evidence that chloromycetin produced complete inhibition of the growth of vibrio choleræ in a concentration of 5 micrograms per c.c. of culture medium (Gauld *et al*[3]). Terramycin also inhibited the growth of vibrio choleræ in concentration of 2 to 5 micrograms per c.c.[4] This led to their trial in cholera. Chaudhuri *et al*[5] investigated the effects of chloromycetin in a small series of cases and were not impressed with the results; although they remarked that stools were rendered vibrio-free much earlier than in control cases. This trial with chloromycetin was followed by trials with terramycin by Das *et al*[4] and Konar and Sen Gupta[6]. Unfortunately, however, no significant reduction of mortality was observed by any of these workers. The duration of excretion of vibrios was considerably reduced. Roy Chaudhury *et al*[7] reported on their trials with terramycin, chloromycetin, and aureomycin in cases of cholera. They used smaller doses of the antibiotics. The stools of these cases were rendered vibrio-free earlier in the course of the disease as compared to controls. In this respect terramycin was found to be most effective. The mortality rate was 10 per cent with terramycin (40 cases), 10 per cent with aureomycin (20 cases), and 15 per cent with chloromycetin (20 cases). The mortality of cases not treated with antibiotics was 22 per cent. The authors noted that the results are not of any statistical significance, and remarked that it was not possible to assess the relative merits as to their curative value owing to the small number of cases treated and also because of the fact that the groups were not strictly comparable. There was no doubt that the antibiotics tried had some adverse effect on the longevity of the vibrios in the lumen of the intestines; yet the therapeutic effects were not at all significant. Could the disappointing results be due to the delay in administration of the antibiotic? Would the results be better if the antibiotics were administered sufficiently early in the course of the disease? The problem was once again taken up by Das *et al*[8] and the results of their investigation are being published elsewhere in this issue. With a view to ensure that the drug was given to cases in an earlier stage of the disease arrangements were made for the speedy despatch of ambulances and administration of the drug in the patients' houses and their subsequent hospitalization. By the adoption of this method oral terramycin was adminstered to 46 cases within 6 hours of the onset of the disease. The results have been compared to controls whose treatment was also commenced within a similar period. The results of these two groups and of the whole series have been statistically analysed from various angles and do not show any significant advantage in the terramycin treated group. It must be noted that saline infusions were also used in all cases treated with terramycin.

The intravenous route of the administration of an antibiotic on first thoughts may be considered inapplicable in cholera as the vibrios are inside the lumen of the bowel. But on the basis of the observations of Saha and Das[9] that sodium thiocyanate injected intravenously diffused into the lumen of the intestine, within a period of one hour, a trial was also undertaken by Das *et al*[10] with intravenous terramycin in a small number of cases of cholera and the results are also published in this issue of the Journal. It appears that the terramycin actually escapes from the blood into the bowel lumen fairly early after its intravenous injection. However, the trials were on a small number of cases and no definite conclusion can be drawn as to the therapeutic efficacy of the drug when administered by this route. Chaudhuri *et al*[11] have made another trial with oral chloromycetin, and have also used the drug intravenously. The trial with intravenous chloromycetin was also on a small number of cases and the results are inconclusive.

The failure of these vibriocidal drugs once more emphasises the immense importance both of prophylaxis and of the early restoration of body fluids on sound biochemical principles.

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CURRENT MEDICAL LITERATURE

Pernicious Anæmia

Murphy (*J.A.M.A.*, 149. 907, 1952) gives in the following lines the summary of his observation:

The final chapter in the story of pernicious anæmia is yet to be written. It is possible, with our present knowledge of the disease, to prevent the occurrence of the common manifestations, particularly those that result from destruction of the nerves of the central nervous system, the most incapacitating and hazardous features of the disease. Histamine-fast achlorhydria is the result of a congenital defect of the mucosa of the stomach and is probably present from birth in the person who, at some time, presents other evidences of the disease. The well recognized familial incidence of pernicious anæmia should make it possible to anticipate the disease in other members of the families of these patients and to start preventive therapy in those with achlorhydria. The physician should be alert to the earliest signs and symptoms in all patients who present themselves for study. Even slight anæmia, glossitis, numbness, tingling or hyperæsthesia of the hands or feet, and the somewhat vague complaints of easy fatigability and weakness should suggest the need for determination of the patient's gastric acidity. In this way the disease may be recognized before damage has resulted. Although pernicious anæmia is generally considered to be a disease that occurs at or above the midyears of life, manifestations probably go unrecognized for many years. A severe anæmia in a girl 10 years of age was recognized as being pernicious in type, and treatment produced the expected response. She has continued well for 16 years with regular treatment, except for one relapse that occurred when she was unable to receive treatment. She is married and has two children. It is of interest to note that evidence of the disease first appeared in her mother about five years ago. I now have under treatment a fairly large group of patients in whom the disease was recognized in its incipient state and who will consequently avoid the more distressing manifestations.

The recent demonstration by Segal and his associates (*Proc. Soc. Exper. Biol. & Med.*, 74: 218, 1950) of a method for determining the presence or absence of free hydrochloric acid in the stomach by means of an ion-exchange resin, in place of the usual unpleasant method of gastric analysis, should simplify the problem of diagnosis. As both the physician and layman become more acutely aware of the benefits to be derived from liver and its extracts, early recognition and treatment should become practically universal.

Cirrhosis of the Liver

Portis and Weinberg (*J.A.M.A.*, 149: 1265, 1952) write:

The incidence of cirrhosis is increasing. The use of sulphonamides and other hepatotoxic agents and the occurrence of serum homologous hepatitis and epidemic hepatitis of World War II may be partly responsible. Recognition of the cause of liver disease is necessary for effective therapy.

Patients should be at bed rest and preferably hospitalized. The decrease in hepatic blood flow of cirrhotic patients while standing offers theoretical confirmation of the clinical impression that early mobilization of these patients is detrimental. Bed rest is imperative during jaundice in cirrhotic patients. A high caloric, high protein diet is important in the long-term management of chronic liver disease. A diet of 3,500 calories is suggested.

Intravenous infusion of carbohydrates is desirable, in order to hasten the regeneration of liver parenchyma. In patients with atrophic cirrhosis and ascites, the use of hypertonic dextrose solution induces diuresis. Infusions of amino acids may be necessary in order to maintain normal nitrogen balance in patients unable to eat a full diet. Administration of whole blood or plasma may be beneficial when there is marked hypoproteinæmia, anæmia, or a hæmorrhagic tendency.

While it has become almost routine to include supplementary administration of vitamin B complex to cirrhotic patients, definite evidence of deficiency in cirrhotics, *per se*, has not been demonstrated. Vitamin K should be administered regardless of prothrombin or bleeding time. Vitamin A and D in doses of 5,000 and 1 000 I.U. respectively 1-2 times daily, are of definite value. Choline and methionine seem to be of value when fatty infiltration of the liver exists, although this is controversial, and their action other than that found in a high protein diet has yet to be demonstrated beyond doubt. The use of crude aqueous liver extract seems to aid in detoxication and should be a part of the therapeutic regimen for patients with severe liver disease. Intravenous use of a water-soluble liver extract has been recommended for anorexic patients. The authors advocate use of potassium iodide in cases of jaundice. If syphilis is a causative factor, the indication for the iodide is definite.

Although the crucial factors leading to retention of fluid with ascites and œdema in cirrhotic patients are not known, the employment of salt restriction and diuretics as well as salt-poor albumin is suggested: however, such use is not without certain dangers.

The value of the administration of cation exchange resins is limited, since the amount recommended, 60 gm. per day, is insufficient and larger doses are impractical. Patients on prolonged salt restriction must be watched carefully for signs of the low salt syndrome. Abdominal paracentesis increases this danger when preceded by severe salt restriction and the use of diuretics. On the basis of preliminary work, corticotropin (ACTH) therapy and cortisone therapy seem to be contraindicated in treatment of severe liver cirrhosis. Surgical treatment of portal hypertension has its best indications in patients with extrahepatic portal obstruction and is hazardous when there is a marked liver insufficiency.

Although the laboratory studies have become very important tools for the diagnosis and management of liver disease, they are more valuable when interpreted in the light of keen clinical observation.

Cholecystography in Hepatitis and Cirrhosis

Jarvinen and Paltia (*Am. J. Digest Dis.*, 19: 244, 1952) write that cholecystography may in many cases give such a selective picture regarding the hepatic function that it helps in the differential diagnosis of various diffuse hepatic affections, as of hepatitis and liver cirrhosis. As a practical method, cholecystography ought to be given more value in this respect than has occurred up to now, in particular, if the help of special laboratories cannot be obtained in the examination of the patients. This examination is considered to have no untoward effects on the patient. 19 patients suffering from acute or subacute hepatitis and 19 cases of liver cirrhosis were subjected to cholecystography with dye given per os in the usual manner, at a time when the icterus index was below 1:30. The shadow of the gall bladder appear-

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Nicotinamide	...	15 mg.
Calcium Pantothenate	...	3 mg.
Sodium Glycerophosphate	...	gr. 4
Potassium Glycerophosphate	...	gr. 4
Calcium Glycerophosphate	...	gr. 4
Strychnine Glycerophosphate	...	gr. 1/30
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ed normal in 15 cases of hepatitis, was less pronounced than normal in 3 cases, and in one case in which the patient suffered also from cholelithiasis it did not appear at all. In the cases of liver cirrhosis, the shadow of the gallbladder did not appear normal in any of the cases; in 6 of the cases a slight shadow was observable, and in 13 cases, no shadow could be observed. A comparison with some hepatic function tests also suggested that cholecystography may be of some help in the differential diagnosis of hepatitis and liver cirrhosis.

The Encephalopathy of Hyperinsulinism

Fineberg and Altschul (*Ann. Int. Med.*, 36: 536, 1952) write that the use of insulin may at times produce severe and permanent damage to the brain, with such symptoms as hemiparesis, ataxia, incontinence, aphasia, choreiform movements, Parkinsonism, epilepsy, mental deterioration or idiocy. As a rule, such results have followed the use of very large doses of insulin to combat acidosis and coma. Not infrequently death ensues despite fairly good regulation of the blood sugar level. In either case the main damage was found to be (as checked at autopsy) extensive alterations in the nuclei of the neurons, which in many instances were displaced, pyknotic and even fragmented. Such results obviously depend on a low brain sugar. There is no necessary correlation between blood sugar and brain sugar. An insufficiency of glucose in the blood may not, under some circumstances, produce an insufficiency of cerebral cellular content of glucose, and, conversely, a sufficient blood sugar may not always insure an adequate intracellular content. The brain cells are not always capable of taking up glucose and/or incapable of oxidizing glucose. In cases where such encephalopathy does not respond immediately to glucose, and there appears to be danger of permanent cerebral damage, the use of ACTH and adrenocortical hormone is suggested.

Insulin Dosage in Diabetics

Marshall (*Med. Times*, 80: 167, 1952) found that one unit of plain insulin will reduce the blood sugar by 3 mgm. per cent in 2 hours. In cases in coma, he subtracts 120 from the blood sugar reading, as 120 is taken as the upper limit of normal blood sugar. By dividing the remainder by 3, he obtains the number of units of insulin to be given to bring the blood sugar down to normal in a short time. He has found that the method works out well in practice.

X-ray Appearances in Asthma

Royle (*Brit. M. J.*, 1: 577, 1952) in presenting a review of the radiological findings in 200 cases of asthma, 100 children and 100 adults, made an attempt to correlate the x-ray appearances with clinical findings. The series consists of typical cases of asthma, seen as out-patients only.

Sinus radiographs show changes in over half the cases, there being a higher proportion with marked abnormality in the children than in the adults.

Chest radiographs, disregarding minor abnormalities, fall into five groups; normal, emphysema, emphysema and increased hilar shadows, increased hilar shadows, and other important abnormality. The last group includes cases of pulmonary tuberculosis, segmental collapse, and recurrent transient shadows believed to be due to localized areas of infection.

In attempting to distinguish between irreversible emphysema and pulmonary distension due to the bronchiolar obstruction of asthma, the value of radiographs taken in full inspiration and full expiration, and of comparing one taken in expiration with a normal control, is stressed.

Emphysema is the commonest complication, and is judged to be present in 28 children and 46 adults. The evidence suggests that both chronicity and infection are important factors in its development.

Enlarged hilar shadows are present in a higher proportion of the infective than of the non-ineffective cases. Segmental collapse, with subsequent satisfactory reexpansion, is present in 4 per cent, and is seen in both infective and non-infective types. Active pulmonary tuberculosis is found in 1·5 per cent.

In conclusion it should be pointed out that the chest radiograph in uncomplicated asthma is normal, but that a great deal of help can be obtained from radiography in the diagnosis of complications, in the elucidation of the ætiology, and in the discovery of coincidental conditions.

Chemotherapy and Chemoprophylaxis of Malaria

Chaudhuri and others (*Brit. M. J.*, 2: 568, 1952) write that during the past several years a number of new drugs have been tested at the Calcutta School of Tropical Medicine for their therapeutic and suppressive values in malaria. Patients admitted to the attached hospital were studied, but the main work on the suppressive therapy was carried out in a rural area about 40 miles from Calcutta. As in chemotherapy, so in chemoprophylaxis, chloroquine (base, 0·25 gm. weekly) and camoquin (4-[7-chloro-4-quinolylamine]-alpha-diethylamino-ortho-creosol) (base, 0·2 gm. weekly) proved superior to proguanil also known as chlorguanide (salt, 0·3 gm. weekly or 0·1 gm. bi-weekly). They afforded high protection and reduced splenomegaly, thereby improving the general health of the population and increasing the working capacity. In spite of the fact that the people were living in poor economic conditions without any other antimalarial measures, there was a marked reduction in the incidence of malaria, which varied according to the drugs used. The authors maintain that until antimosquito measures are possible, chemoprophylaxis should continue to have an important place in the suppression of malarial fever.

Isoniazid in Pulmonary Tuberculosis

Cruickshank (*Lancet*, 2: 19, 1952) at the first session of the British Tuberculosis Association in dealing with isonicotinic acid hydrazide (referred to variously as INAH, I.N.A.H., I.N.H. and isoniazid) and its properties observed:

Recent methods have made it easier to study the action of drugs. The new medium "Tween-albumen" allows the tubercle bacillus to grow easily and diffusely. Sir Howard Florey and his colleagues at Oxford, have devised a beautiful technique by which a tubercle on a rabbit's ear can be watched minutely and the effect of drugs directly observed.

While in the same laboratory a technique has been devised by Dr. G. B. Mackeness for keeping macrophages alive in nutrient medium for three weeks, and studying the intracellular as well as the extracellular action of drugs on tubercle bacilli which the cells have ingested. This last method, Professor Cruickshank said, may make the use of animals unnecessary for drug studies on tuberculosis.

Isoniazid has proved to be highly specific, acting on acid-fast bacilli and otherwise only on some fungi. It is more effective against virulent tubercle bacilli than against those

which are less virulent, and its action is not affected by resistance of the bacillus to streptomycin or p-aminosalicylic acid (P. A. S.). We do not know yet whether it is bactericidal. Mackeness has shown that isoniazid is as active inside the phagocyte as outside, and acts in very low concentration. Streptomycin is less active inside than outside the cell; terramycin is equally active in both; while P. A. S. has almost no action inside the cell.

Pharmacologically, isoniazid is almost perfect—easily prepared, stable, possible to autoclave, quickly absorbed (reaching a peak in the blood in ½-1 hour), causing little intestinal disturbance, and readily diffusible, even into the cerebrospinal fluid. Some 45-70 per cent is excreted in the urine in 24 hours, and a further percentage in the fæces and saliva. At least ten times the effective dose can be attained in the blood within an hour, and, since it stays at an effective level for 12 hours, two doses daily are sufficient. The level in the C.S.F. is as high as in the blood. Liver damage and some excitation of the central nervous system have been seen as toxic effects in animals.

Early clinical experience—Dr. Morland discussed experienced isoniazid at the Seaview Hospital, New York, which he visited in April. A group of 44 patients with bilateral caseous disease of the pneumonic type were selected for treatment; all were febrile and going downhill, and all were resistant to streptomycin. They were treated with isoniazid only; their temperatures fell to normal, and there was an average gain of 19 lb. in weight among them over 15 weeks. Their appetites became ravenous, they lost their apathy and became euphoric, and the number of tubercle bacilli in their sputa was much reduced. But cavity closure was not common, and the erythrocyte-sedimentation rate (E.S.R.) was little affected. There was some insomnia, but no serious injuries such as liver damage. The isopropyl derivative of the drug gave much the same results as the acid hydrazide, but was a little more toxic. Dr. Morland was told that there was no evidence of drug-resistance at Seaview, but this is not the opinion of other American centres. The gain in weight stopped when patients reached their maximum normal weight. Chronic cases did not improve to the same extent as acute cases.

He has himself given isoniazid, in daily doses of 2-4 mgm. per kg. body-weight, to 40-50 patients, and has seen no toxic effects, not even insomnia or nervousness. Some gained up to 2 st. in weight, others showed little change. It is not known whether or not the increased appetite is due to a specific action on the tubercle bacilli or to some other cause; but he has lately given the drug to a girl with anorexia nervosa with benefit to her weight and appetite. He has seen rapid healing of tuberculous ulceration of the larynx with isoniazid, and one case of a streptomycin-resistant ulcer of the tongue and larynx which healed in 2 weeks. He has also seen the drug check the downward course in 6 out of 7 advanced chronic cases; but how lasting, he asked, will this effect be? He thinks the drug may be as effective as streptomycin given with P. A. S., but he doubts it. On the other hand it is pleasant to take and it produces euphoria, which means much for the patient with deteriorating disease.

Dr. E. G. Sita-Lumsden has visited centres in other parts of the United States, as well as Seaview, and confirmed that no serious toxic results have been seen there, though some patients have shown euphoria, nervousness, twitching, and occasionally dryness of the mouth, postural hypotension, fall in hæmoglobin concentration, eosinophilia, and transient albuminuria. No severe liver damage has been seen in man. Reports are now coming in of delayed improvement, with shrinkage of cavities, after 5-6 months of treatment. The drug seems to have about the same activity in acute tuberculosis as streptomycin, though it is less predictable in its results. The more acute the disease, the more dramatic the response: fever may even terminate by crisis. In acute pneumonic disease the cough is usually gone by the end of the second week, and sputum decreases so much that by the end of the third week it may be difficult to get any for testing. The clinical and subjective changes, however, are much more immediate and impressive than radiological changes, which are slower and less certain. Fluid levels in cavities may dry out, but in 3 of Dr. Sita-Lumsden's patients fluid level appeared during treatment. He thinks isoniazid alone is probably not quite so good as streptomycin with P. A. S., but isoniazid and streptomycin together will probbably be better. He has known isoniazid produce recovery, without relapse or meningitic spread, in 6 cases of acute miliary tuberculosis. Resistant strains may develop very rapidly, and probably 60-80 per cent of patients will become resistant after 3 months; but resistance may soon be lost, for artificially induced resistance in B. C. G. is quickly lost by back-mutation. It may thus be useful to give courses lasting 6-8 weeks. His experience with 65 cases has borne out these generalisations: the general picture of improved appetite, reduced sputum, and gain in weight was there, with some improvement, great or little, in the x-ray findings in nearly half the cases. He noted that while under treatment 7 patients had hæmoptysis for the first time. He concluded that isoniazid is not more appetiser but a powerful drug of the same order as streptomycin given alone.

Treatment of Pulmonary Tuberculosis with Isoniazid

The following is the summary of an interim report to the Medical Research Council by their Tuberculosis Chemotherapy Trials Committee:

In a clinical trial of isoniazid (isonicotinic acid hydrazide) 331 patients with various forms of pulmonary tuberculosis were studied; 173 were treated with isoniazid (200 mgm. daily), 158 with streptomycin (1 gm. daily) plus P.A.S. (20 gm. daily). Treatment was randomly allocated in all cases, and at the time of selecting a patient the treatment which he would receive was unknown to the physician. The present interim report analyses the results at the end of three months' treatment and observation. The trial is still in progress with over 750 patients.

Three main groups were observed: Group 1, with acute rapidly progressive disease of recent origin; Group 2, with other forms suitable for chemotherapy; Group 3, with chronic disease considered unlikely to respond to chemotherapy.

On admission the two treatment series had a similar distribution of patients with severe and less severe illness.

Isoniazid showed low toxicity at the dosage used and for the period of three months.

At the end of three months there was rather more improvement in general condition in the patients on isoniazid (H) than in the other patients (SP), but the differences are not great. Average weight gains were considerably greater in the H cases (11 lb.) than in the SP cases (6 lb.).

Temperature fell to normal in 67 per cent of febrile SP cases and in 56 per cent of febrile H cases; in the acute Group 1, temperature fell to normal in 64 per cent of SP cases

and 68 per cent of H cases. In cases with a sedimentation rate over 20 before treatment, it fell to 10 or less in 22 per cent of SP cases and 20 per cent of H cases.

The radiological changes were independently assessed. Two-plus or 3-plus improvement was seen in 29 per cent of SP cases and 26 per cent of H cases; in the acute group, it was seen in 37 per cent of SP cases and 40 per cent of H cases. Under streptomycin plus P. A. S. there was radiological deterioration in one case, and three deaths; under isoniazid, deterioration was seen in 10 cases and there was one death.

The proportion of cases becoming bacteriologically negative before the end of the second month was 26 per cent for SP cases and 23 per cent for H cases.

The conclusion, judging wholly from short-term results, is that isoniazid is a very effective drug in pulmonary tuberculosis, but given alone it is not more effective than streptomycin plus P.A.S.

Bacillary resistance to isoniazid was found in 11 per cent of cases at the end of the first month, in 52 per cent at the end of the second, and in 71 per cent at the end of the third. Lack of progress, as assessed by radiological change, was found to be related to the emergence of drug resistance. This is therefore a most serious problem affecting the use of isoniazid. The effects of combining isoniazid with other drugs are under study.—*Brit. M. J.*, **2**: 735, 1952.

ACTH and Cortisone in Idiopathic Thrombocytopenic Purpura

Stefanini and others (*J.A.M.A.*, **149**: 647, 1952) give in the following lines the summary of their observations:

Eleven patients with 'acute' and 'chronic' idiopathic thrombocytopenic purpura were treated with corticotropin (ACTH) or cortisone, and systematic studies were conducted in eight. Although no permanent remission of the disease was obtained in any of the patients studied, these hormones (*a*) reduced, in most cases, the spontaneous bleeding manifestations, (*b*) improved the capillary fragility, and (*c*) shortened the bleeding time and prolonged the phase of initial vasoconstriction that followed the incision of the skin. It appears that corticotropin and cortisone may be usefully employed in patients with idiopathic thrombocytopenic purpura: (*a*) to control severe bleeding, especially in those with the 'acute' type of the disease, when an expectant attitude may be rewarded by the occurrence of spontaneous remission; (b) prior to splenectomy, when this procedure is considered necessary, to reduce the loss of blood at operation; and (*c*) when splenectomy has been unsuccessful and severe spontaneous bleeding manifestations continue.

Treatment of Non-Tuberculous Pulmonary Infections

Barach and others (*Bull. New York Acad. Med.*, **28**: 353, 1952) give in the following lines the summary of their observation on non-tuberculous pulmonary infection:

Antibiotic therapy of chronic non-tuberculous pulmonary disease has been discussed on the basis of results of studies of the use of penicillin, the broad-spectrum antibiotics and the diethylaminoethyl ester of penicillin. In the treatment of acute upper respiratory infections, the broad-spectrum antibiotics have the advantage of a prompt control of infection with an infrequent incidence of allergic complications; these drugs have a similar value in the therapy of exacerbations of chronic respiratory infection, such as chronic bronchitis and bronchiectasis, with or without bronchial asthma and pulmonary emphysema.

When the aim of treatment, in cases of chronic bronchitis or bronchiectasis, was a prolonged arrest of chronic infection, penicillin appeared to be preferable as the mainstay of treatment, despite the risk of allergic reactions. The prolonged use of broad-spectrum drugs has been followed by invasion with highly resistant bacteria, which is the special hazard of continued simultaneous elimination of the common gram-positive and gram-negative flora of the respiratory tract in debilitated patients with advanced chronic bronchopulmonary disease. However, limited courses of chloromycetin, aureomycin and terramycin were frequently of marked value, during or after penicillin treatment, when used for the purpose of eliminating gram-negative bacteria or penicillinase production by these organisms.

In favourable cases antibiotic therapy resulted in a remarkable improvement in respiratory function and general health; the disappearance of cyanosis and the alleviation of dyspnœa on exertion indicated the importance of decreasing chronic inflammatory swelling of infected bronchi in properly selected patients with chronic bronchopulmonary disease.

The diethylaminoethyl ester of penicillin has the special quality of being concentrated in the lungs and in the sputum in high concentrations after intramuscular injection. The clinical results of its use indicated that a prompt and effective control of infection was frequently achieved in patients with chronic bronchitis and bronchiectasis. This compound appeared to have a unique value in respiratory infections due to gram-positive bacteria.

The importance of deliberate coughing, especially after bronchodilator medication, was found to be a beneficial procedure in patients with bronchial asthma and pulmonary emphysema. A productive cough, induced by inhaling epinephrine aerosols, or at times by cigarette smoke, resulted in improvement in respiratory function in cases in which mucoid or mucopurulent sputum was thereby eliminated.

Methods of simulating the human cough have been developed by mechanically inducing high volume flow rates in expiration. A modification of the equalizing pressure chamber has been employed as well as a simple exsufflation apparatus attached to the tank respirator. In the latter device the lungs were expanded by a pressure of 40 mm. Hg, and the high velocity expiratory flow rate accomplished by a sudden release of pressure at the height of the inspiratory cycle. Elimination of bronchial secretions in patients with poliomyelitis was followed by clearing of pulmonary atelectasis. These methods have been used as an aid in the expectoration of mucous plugs and purulent sputum in patients with bronchial asthma and pulmonary emphysema.

A discussion of other forms of physiologically directed therapy included diaphragmatic respiration, pursed lip respiration, negative pressure breathing, and manual compression of the thorax and abdomen.

The use of cortisone and ACTH in short intensive courses appeared to be preferable to continued therapy in patients with bronchial asthma and the bronchospastic type of pulmonary emphysema, since worthwhile remissions may be achieved in selected cases with little risk of adverse reactions when suitable precautions are followed.

Thymectomy in Myasthenia Gravis

Ross (*Lancet*, **1**: 785, 1952) writes that of 100 patients with myasthenia gravis who had benign thymomas removed surgically 87 show complete relief of symptoms, considerable

or moderate improvement, or improvement as judged by the reduction in daily neostigmine requirements after operation. The average period of follow-up was four and a half years after operation.

The benefit from surgery was greatest in the patients who had had myasthenia for the shortest time before operation. In this series the age of onset is not significant.

Comparison with three large series of patients treated by medical means alone reveals that among these the proportion of cured or greatly improved is smaller, and the proportion of deaths due to myasthenia gravis much higher, than in the group presented here.

CURRENT TOPIC

BLUEPRINT FOR IMPROVED PHYSICIAN-PATIENT RELATIONS

C. L. ROBERTS, M.D., writes in *J.A.M.A.* (149: 1196, 1952):

The public is becoming impatient with the physician who is merely a good technician. Years ago, the patient had a beloved family physician to whom he could take all of his problems, medical and personal. To-day, advances in medical and surgical methods assure the patient of improved physical treatment, but he often finds that he is no longer treated as an individual with a disease but as a "case" of a certain disease. Worse still, if the patient suffers from one of the many conditions that cause bothersome, disabling aches and pains that cannot be analyzed medically nor classified definitely into one category or another, the illness is too often considered to be psychosomatic.

Every patient who seeks medical help for the relief of painful symptoms is entitled to an unhurried and sympathetic hearing, whether his problems be primarily physiological, primarily psychological, or a combination of the two. Patients with organic problems are often in need of a strong dependable relationship, a framework within which reassurance can be offered to offset or alleviate the anxiety aroused by the patient's fears. On the other hand, patients whose symptoms are mildly or markedly excessive in view of the physical findings often experience a great deal of relief in sharing emotional problems with their physicians.

Beginnings of the relationship between the physician and the patient are laid even before the initial contact with the physician. The impress of the physician's personality can be felt the moment the patient steps into the reception room. Favourable first impressions are most important.

Office Mirrors the Physician's Attitude—The patient should be regarded as a guest, not as an interruption of the receptionist's work. The receptionist, like all persons employed by the physician, will take cue from her employer; if he apparently welcomes the patient's visit, the receptionist will do so; if the physician is annoyed at the interruption, that attitude is passed on by the girl at the front desk.

Someone should be on hand to greet each patient. The newcomer should be made to feel welcome; he should be smiled at and spoken to cordially, by name if he has been in before. If the patient's name is foreign or difficult to pronounce, the receptionist should record the correct pronunciation of the name on the folder or card for the physician's use and for future reference. Use of the patient's name shows recognition and appreciation.

The patient should be given some idea of the probable wait before he can see the physician. If the physician has been called out, the patient should be informed of this, and the receptionist might suggest that the patient use the time for having coffee or shopping. If, for any reason, the physician will be unable to see the patient at the appointed time, every effort should be made to reach the patient at the earliest possible moment by telephone or even by telegram. The physician's staff should show that they and the physician appreciate the fact that the patient's time, too, is valuable.

The physician himself can do much to make the patients awaiting their turns in the reception room feel his friendly interest. A smile or nod in recognition and welcome as he catches sight of an old patient will accomplish wonders. A high degree of intelligence is needed to increase the patient's feeling of his own individuality and to convince him that his best interests are being respected. The physician should insist that the office nurse usher in patients in their turn, rich and poor alike. Patients should not be turned away because they have neglected to make appointments if they can be fitted into the appointment schedule.

Special provision should be made for the handling of exceptional patients, such as the patient with facial deformity who shuns contact with others, the patient who coughs and sneezes, the drunk or belligerent patient, and the talkative, forgetful, and argumentative elderly patient who needs kindly and tactful attention.

Patients expect a sense of reserve on the part of the physician and his employees. If the receptionist or office nurse gossips and discusses the idiosyncrasies of the man or woman who has just left the office, the patient receives the impression that the physician, too, is probably too talkative about his patient's concerns. If charts are left out in the open where they can be studied by all comers, and, if names are used loosely in telephone reports of laboratory or physical findings, patients are uneasy. Closed doors add to feelings of privacy. The waiting room serves as the physician's showcase, and the secretary or receptionist should be considered as mirror of the doctor himself.

Concept of the "Personal Physician"—Men in medical practice to-day fall into one of two categories: the specialist and the general practitioner. The specialist publicly announces his intention to limit his practice to some speciality, possibly to the study of one organ or one disease process. The general practitioner, on the other hand, purports to fill the place of the beloved old-time family physician—a family physician, however, with modern techniques and knowledge.

The public is confused by the multiplicity of medical specialities, yet it has come to think of the general practitioner as a medical drudge who can handle small, routine medical problems adequately but is hardly to be trusted with serious medical disease. The public has become very specialist minded.

Ernest Dichter, in his report to the Committee on Medical Economics of the California Medical Association, has suggested that the term, "general practitioner", to which such disapprobation has attached, should be replaced by the concept of the "personal physician," a specialist in medical management whose job it is to administer, secure, and supervise the best available care for all medical and surgical problems. While the specialist limits his study to one disease or one organ, the personal physician gives his attention to the disease process in the whole person. Moreover, he sees

the whole person operating a specific family set-up and within a definite socioeconomic framework.

For example, the specialist, focussing his attention on the effects of tension and overwork on a single organ or group of organs might say, "Stop worrying. Go to a beach resort for a period of at least three months, and rest up." This advice, while practicable for patient A or B, may be wholly unrealizable when applied to patient C, who is barely able to support herself and her bedridden mother. The personal physician, knowing the circumstances, that a three month holiday is out of the question and that the suggestion would only add to the patient's distress and give her additional cause for worry, might suggest a more practical alternative in the light of the patient's situation, such as a rearrangement of work hours, frequent rest periods, week-ends in bed, and the like. Knowing the patient's background, the personal physician is able to sift his observations with shrewdness and judgment not always given to the specialist.

Sympathetic Handling Important—In the physician's inner sanctum, the physician-patient relationship is defined as the physician listens with calm, unhurried, and sympathetic attitude to the patient's version of the problem. The physician will often learn much in this way that he might miss in the more direct question-and-answer type of interview. Kindness and tactfulness are most important. It is not easy to be pleasant as one nears the end of a long day, but every patient needs good humour, sympathy and a quiet manner, no matter how weary or upset the physcian may be personally. At times, high tension in the patient may be relaxed by a pleasant bit of conversation or a momentary diversion.

The physician should concentrate his entire attention on the patient during the consultation. His desk should be free from distracting material. If possible, he should refrain from answering the telephone while seeing a patient. Patients should receive special handling with reference to age and position. The older man expands in an atmosphere of respect and deference; the aging woman objects to any act that may emphasize her frailty. Adolescent youngsters object to being "treated like children".

Careful and efficient physical examination and performance of indicated laboratory procedures impart to the patient the feeling that a sympathetic and capable friend is in control of the situation. If the examination is made with authority and assurance, the procedure itself has psychotherapeutic value and the medications prescribed often acquire psychological meaning that increases their efficiency beyond their pharmacologic value.

A common criticism of the medical profession is that the physician does not explain the patient's illness to him. Explanations need not be lengthy or complicated. Simple explanations couched in terms the patient can understand and possibly accompanied by simple line diagram, are sufficient. Explanations should include the folowing: (1) what the condition involves; (2) the chances of recovery; (3) the duration of hospitalization; (4) the length of convalescence; (5) the probable cost; and (6) how soon normal activities can be resumed. The patient should be invited to become an active participant in the whole treatment.

False hopes should not be aroused. Patients usually react to bad news more favourably than members of the family. If the patient's fears are unfounded, the physician should not laugh at the fears; he should explain them away instead. Patients whose symptoms cannot be explained by physical findings or who report symptoms out of all proportion to observable pathological conditions often make speedy recoveries after the nature of their illness is explained to them. Physicians should be slow to dismiss an illness as psychosomatic. Apparently psychological symptoms may arise from organic causes. Whether the patient's illness is primarily physiological or primarily psychological, the patient should receive the best aid possible.

"Calling in" the Specialist—Close co-operation between the specialist and the personal physician will assure the best care to the patient. In cases where the knowledge or technique of the specialist is of value, the personal physician should discuss the need for a specialist's care with the patient. The personal physician should act for the patient in choosing a specialist and then, rather than turn the patient over to the specialist, he should "call in" the specialist. To maintain continuity, the personal physician and not the specialist should conclude the case.

Thus the patient will be given a feeling of security and continuity of relationship. He will feel that the physician has a warm, friendly, and continuing interest in him. This feeling can be strengthened by a telephone call to the patient after the case has been concluded, inquiring as to the recovery of the patient.

Fees—Medicine should be placed on a business basis; this means that fees should be discussed in the initial interview. Each physician should have his own constant, self-determined fee schedule, based on his cost of doing business plus a reasonable profit. In setting up a fee schedule, the physician must bear in mind the range of fees customarily charged for the services in the area. He may decide that he prefers his fees to be among the higher fees within the customary range. If necessary, he must decrease his costs so that his fees can be kept within the accepted range.

The physician should never raise his fees because the patient is wealthy; his fee schedule should be revised only downward, in special instances. Financial return, although necessary, should be subordinated to humanitarian aims. Few physicians who enter medicine because they expect to receive a substantial income are successful.

The physician should acquaint himself with the community's resources, and he should make provisions for the care of indigent patients. He should be diplomatic in his referrals to such agencies, such as by referring to the foolhardiness of assuming an extra burden at the time, rather than laying stress on the charity aspects.

Pleasing Personality Important—It is apparent that the physician must cultivate a warm, emphatic relationship with his patients. He must learn to overlook his patients' faults and shortcomings and to appreciate their good points. He must become aware of the patient as a whole and as an individual and he must cultivate a real interest in patients as persons.

Since his relations with his employees are reflected in the atmosphere of the office, the physician should make it a point to have an occasional word of appreciation if he always, finds his rooms in readiness when he comes into the office, his mail in order and laid out with requested information clipped therein. He must cultivate a good relationship with other physicians in the community, for his income is in part determined by referrals.

If the physician finds that he lacks the personality traits needed to succeed as a personal physician, he would be wise to affiliate himself with a medical group, a hospital, or a laboratory, where size of practice is not so dependent on personality.

NOTES AND NEWS

SIXTH ANNIVERSARY OF UNICEF

Six years ago on 11th December UNICEF was created by the General Assembly of the United Nations. The member nations determined that something must be done to help the children, who have no part in politics, but who are among the greatest victims of war.

UNICEF's function is to draw upon those nations able to help with money, goods and services and to distribute that aid to countries on the basis of children's needs which cannot be met from the countries' own resources. A review of its activities in Asia and particularly in India is given below.

In Asia, UNICEF started to work three years ago. To date it has allocated more than 17·5 million dollars for child-welfare programmes in 11 countries and six territories stretching from Afghanistan to Taiwan.

UNICEF began operations in India in 1949 with a modest Milk Distribution Scheme. To-day UNICEF continues emergency feeding programmes but lays greater emphasis on helping Governments with programmes calculated to make a permanent contribution to Child Welfare Guiding principles are that *Aid is given without discrimination on grounds of race, creed, nationality or political belief*, and that *UNICEF'S aid must be matched by at least equal effort within the recipient country*.

$7,076,000 or Rs. 3·37 crores is the extent of the UNICEF contribution to date in support of Health and Relief programmes in India.

1. On Fellowships granted $91,000; (2) on Feeding projects $462,000; (3) on Tuberculosis Control $1,252,000; (4) on Child Health Programmes $1,366,000; (5) on Venereal Disease Control $107,000; (6) on Relief Programmes $944,000; (7) on Calcutta Training Centre for Child Health Workers in South East Asia $930,000; (8) on Malaria Control $1,801,000 (9) on Penicillin Plant $850,000.

WHO COMMITTEE AND PLAGUE DEATHS

The World Health Organization's Expert Committee on Plague, unanimously agreed that deaths from plague could be avoided in the present state of medical knowledge.

According to the experts, adequate dosages of new antibiotic drugs like streptomycin, could consistently reduce deaths to below 10 per cent of cases even in the pneumonic and septicæmic varieties of plague, until recently considered to be almost 100 per cent fatal. In uncomplicated cases of ordinary (bubonic) plague, sulfa drugs used alone gave satisfactory results.

The Committee emphasised that the most effective and valuable method of preventing plague outbreaks was by improvement of houses so that rats could no longer live in close contact with man. Realising that this was an expensive and long-term objective, the experts reviewed other modern weapons of plague prevention including vaccination, the use of DDT against rat-fleas, and certain basically new rat poisons.

Insecticides like DDT are now proved to be very powerful in destroying the chain of infection between the rat and man. The Committee recommended their use on the largest possible scale particularly for checking the outbreak of epidemics. In non-epidemic periods the wholesale destruction of rats by the new rat poisons known as anticoagulatants was an important additional measure of protection.

NEXT DIRECTOR-GENERAL OF WHO

The Executive Board of the World Health Organisation nominated Dr. Marcolino Candau of Brazil as the next Director-General of WHO.

The nomination of Dr. Candau, now Deputy Director of the organisation in the United States will go for approval before the sixth World Health Assembly when it meets at Geneva in May next.

Dr. Candau will succeed Dr. Brock Chisholm (Canada) who announced his resignation from the post last December.

MEDICAL SCIENTISTS TOURING IN INDIA

Fourteen of the world's leading medical scientists from eight different countries spent one month each in Madras and Bombay during February and March, 1953. The team's visit to India was sponsored jointly by the World Health Organisation and the Unitarian Service Committee (U.S.A.).

The members of the team were the following:

Dr. Joseph C. Aub, Professor of Research Medicine, Harvard University, U.S.A.;

Dr. Stuart C. Cullen, Professor of Anæsthesiology, The State University of Iowa, U.S.A. (*in Madras only*);

Dr. Karl Evang, Director-General of Public Health of Norway, Oslo, Norway;

Sir Alexander Fleming, Principal, The Wright-Fleming Institute of Microbiology, University of London;

Dr. John E. Gordon, Professor of Preventive Medicine and Epidemiology, Harvard University School of Public Health, U.S.A.;

Dr. Edward Grzegorzewski, Professor of Public Health, Director of WHO Division of Education and Training Services, Geneva, Switzerland;

Dr. Corneille Heymans, Professor of Pharmacology, University of Ghent, Belgium;

Dr. Erik Husfeldt, Professor of Surgery (Thoracic Surgery), University of Copenhagen, Denmark;

Dr. Samuel Z. Levine, Professor of Paediatrics, Cornell University, New York;

Dr. Einar Lundsgaard, Professor of Physiology, University of Copenhagen, Denmark;

Dr. Robert R. Macintosh, Nuffield Professor of Anæsthesiology, University of Oxford; (*in Bombay only*).

Dr. Henry Osmond-Clarke, Honorary Surgeon and Assistant Director, The Orthopædic and Accident Hospital, University of London;

Dr. Georges Portmann, Professor of Oto-Rhino-Laryngology, University of Bordeaux, France;

Dr. Leo G. Rigler, Professor of Radiology, University of Minnesota, U.S.A.;

Dr. Pietro Valdoni, Professor of Surgery, University of Rome, Italy;

The primary purpose of the Visiting Team is to bring leading scientists from India and abroad into personal contact,

and to enable them to exchange ideas on current problems of medical science, thereby stimulating scientific endeavour both in the host country and the home countries of the visitors.

THE INFLUENZA PROBLEM

According to experts of the World Health Organisation, medical science is on the point of mastering influenza whose annual winter outbreaks have serious economic consequences in many countries. This progress, they state, has been made possible through the co-ordinated efforts of a net work of 55 "influenza centres" in 44 different countries working under overall guidance of WHO in conjunction with World Influenza Centre in London. In India the three WHO influenza centres are situated at the Haffkine Institute, Bombay; the King Institute, Guindy, Madras; and the Pasteur Institute of Southern India at Coonoor.

According to the report of the first WHO Expert Committee on Influenza, publication of which has just been authorised, the main difficulty slowing up advance in this field is the variety of influenza viruses, which comprise an extensive range of antigenic variants. Thus, at the present time, research workers are confronted with three groups of viruses—A, B and C, each of which includes several sub-categories.

In their report, the WHO experts express serious doubts as to the value of quarantine measures against influenza, stating that: "the isolation of groups within a community has not been shown to limit the spread of infection. Quarantine at a national level would only be likely to be effective in the case of islands and geographically isolated communities. There is no evidence that in the case of large areas quarantine could be applied effectively".

INQUIRY INTO THE PHARMACEUTICAL INDUSTRY

The Government of India has set up an 11-man expert committee to undertake a comprehensive inquiry into the pharmaceutical industry.

A resolution, published in the "Gazette of India," states that the industry, "which in its more modern form is of relatively recent growth, has had an uneven development and it is necessary in the interests of the country's health and economy to see that it is established on sound lines."

The committee has as its chairman Major-General S. L. Bhatia, Director, Medical Services, and Secretary of the Medical Department of the Hyderabad Government.

It has been asked to study the working of the existing pharmaceutical manufacturing concerns in India, with particular reference to the demand for the drugs produced and their essentiality, the quality of the drugs, the cost of production, the efficiency of the processes employed, and whether the product is made from imported intermediates and penultimate products, or from basic raw materials and chemicals.

It will study the operations of foreign and Indian concerns, as also Indian concerns with foreign association which import drugs and pack them in the country, and the extent of the tie-up between the wholly or partly owned Indian concerns with foreign companies.

The committee has also been asked to recommend steps to encourage the manufacture of important drugs which are imported into the country, and to inquire into the scheme of distribution of pharmaceutical products, whether imported, or manufactured, or packed in the country, the profit-margins to the trade or industry, and the part played in this by purely Indian as well as other concerns.

The members of the committee are: Dr. Vasudev Rao, retired Director of Medical Services, Madras; Dr. B. B. Yodh, Bombay; Dr. J. C. Ghosh, Director of the Indian Institute of Technology, Kharagpur; Dr. Anil Kumar Sen, Calcutta; Dr. R. C. Shah, Assistant Director of the National Chemical Laboratory, Poona; Dr. T. R. Seshdari, Professor, Delhi University; Dr. H. R. Nanji, Bombay; Mr. K. R. Chandran, New Delhi; Mr. P. M. Nabar, Drugs Controller (India), Ministry of Health; and Dr. A. Nagaraji Rao, Industrial Adviser, Ministry of Commerce and Industry. The Secretary will be Mr. K. Vyasulu.

TAPAN KUMAR LECTURES

The Tapan Kumar Memorial Lectures on Rheumatic Diseases will be held this year under the auspices of Calcutta Branch of the Indian Medical Association.

Research workers and interested members of medical profession in this field, may contact the Hony. Secretary of the above branch at 67, Dharamtala Street, Calcutta 13, for further details, on or before 30th April, 1953.

ORISSA COUNCIL OF MEDICAL REGISTRATION

At a meeting of the Council held on 20-1-53 the following important matters were discussed.

1. The Council recommended to State Government to recognise the following qualifications for purposes of registration by this Council: (1) L.M.F. (East Bengal); (2) M.B.B.S. (Osmania); (3) L.M.S. (Osmania) and (4) L.M.P. (Hyderabad).

Government have been requested to increase the initial fee for registration from Rs. 15/- to Rs. 20/-. A proposal to levy annual renewal fee on the registered medical practitioners was discussed and it was decided that Government may be requested to make necessary provisions for the same in the Medical Registration Bill, 1948, which is now under consideration.

2. The Council ordered to remove the names of some registered medical practitioners from the Medical Register under section 15 of the Orissa Medical Regulation of 1936. They also decided to restore the name of Dr. G. H. Patra to the Medical Register whose name was removed in the year 1939 under section 14 of the above regulation.

3. The Council approved the following provisions for inclusion in the code of Medical Ethics for the interest of patients and the attending physicians:

"where the medical practitioner finds that there is

(i) abuse and ill-treatment of the medical practitioner by the patient and/or his relatives and/or friends at the patients' house,

(ii) absence of faith and belief in the skill and honesty of the practitioner;

Overtly and covertly expressed by the patients and/or by patients' relatives and/or friends,

Provided that sufficient notice in writing is given to the patient or his relatives stating the reasons".

CORRESPONDENCE

The Editor is not responsible for any views expressed by the contributors

RESEARCH ON STRESS

SIR,—In perusing the current literature with which this journal is concerned, we note that an ever increasing number of its articles deals with problems pertaining to research on "stress" and the so-called "adaptive hormones" (ACTH, STH, corticoids, adrenergic substances, etc.).

We are writing you because, in our opinion, the success of research in this complex and rapidly developing field largely depends upon the prompt availability and evaluation of relevant publications, a task for which we should like to solicit the assistance of your readers.

In 1950, our Institute has initiated the publication of a series of reference volumes entitled "Annual Reports on Stress" (Acta Medical Publishers, Montreal) in which the entire current world literature is surveyed every year (usually between 2,000 and 4,000 publications). Up to now, we had to compile the pertinent literature partly from medical periodicals, monographs, abstract journals and partly from reprints sent to us by the authors themselves. Of all these, reprints proved to be the best source of data which we felt deserved prompt attention in our annual reports. Hence, in the past, we have sent out several thousand individual reprint requests to authors of whom we knew that they are currently engaged in research on stress and allied topics. Even this procedure did not give us the wide coverage which would be desirable, because it is materially impossible to contact all these authors individually and it often takes too much time to get the requested reprints.

It is evident that in order to insure prompt inclusion of publications in the annual reports, these surveys must develop into a co-operative effort between the authors of original papers and the reviewers. This co-operation was greatly enhanced of late by the publication of announcements, in several medical journals, encouraging investigators interested in stress research to send us their reprints for this purpose as soon as they become available.

We should be grateful if by the publication of this note, you would also bring this problem to the attention of your readers. We are, etc.

HANS SELYE, M.D., PHD., D.SC., F.R.S.(C.),
Professor and Director of the Institute of Experimental Medicine and Surgery,

ALEXANDER HORAVA, M.D.,
Co-author of the "Annual Reports on Stress".

Montreal University,
Montreal.

THE MODERN VAIDYA

SIR,—One of the activities of the Indian Medical Association, equally shared by licentiate and graduate members, has been directed to the steady extermination of the licentiate class and thereby introduction of more or less uniform training for medical graduates in the universities. The objects in view were to elevate the status of the medical profession in India by making its members eligible for registration in foreign countries and make the best medical aid available for the town dweller and villager alike. While the achievement of the first object is within sight, the second is far from being realized. Medical students become accustomed to higher standards of living and after graduation they are reluctant to serve or settle down in private practice in villages. Attempts are being made in some States to surmount this difficulty by resorting to the experiment of supplying for the countryside men imperfectly educated and equipped. This fact was ably commented on by Dr. Mulay in his presidential address, at the 29th All-India Medical Conference, held last December at Patna.

While this problem is receiving consideration, another is coming up before the profession, viz., multiplication of modern Vaidyas, in quite appreciable numbers in the universities. In one of them, Banaras Hindu University, the minimum qualification for admission is Intermediate and the course extends to five years. In addition to the study of Charaka and Sushruta, they learn anatomy including dissection, physiology, pathology and the rest of the branches of modern medicine. The medium of instruction is a mixture of Hindi, Sanskrit and English. The majority of the teaching staff consist of medical graduates some of whom have written text books in Hindi; so far as possible technical terms have been translated into that language. The examiners are regular examiners from other universities who put the candidates to a strict test. Some of these Vaidya graduates have been to other countries for post graduate studies and returned home with foreign degrees. All Vaidya graduates are eligible for registration by the Board of Indian Medicine. They have been assured of better emoluments and status in service. Substantial financial aid has been promised by the State Government for the expansion and equipment of the Ayurved College. The establishment of a research department is being considered. It is no longer a sacrilege to question or contradict the last word said by the ancient sages.

The medical profession is faced with a new situation. Here are bands of young men qualifying every year after a university course of five years, armed with the knowledge of modern medicine and its branches, equipped with modern appliances, with determination to keep pace with the march of science. Will this group and the medical profession ever run parallel or meet to the benefit of all? I am, etc.,

Banaras, S. K. CHAUDHURI.

BAN ON MEDICAL PRACTICE BY QUACKS

SIR,—The curse of medical practice by unqualified persons in Allopathy, Homœopathy, Ayurvedic and Unani systems is on the increase every day.

These quacks through extensive propaganda and advertisement claim to cure such complicated diseases like Poliomyelitis, Paralysis, Epilepsy, Rheumatism, etc., and are playing with the lives of the lay public.

It is time that the members of the medical profession raise their strong voice of protest against the quacks and urge the National Government to ban the practice of medicine by unqualified persons. I am, etc.

29/E, Kamla Nagar,
Delhi 6. RAGHBIR SINGH, M.B.B.S.

RURAL MEDICAL RELIEF

SIR,—Rural medical relief is a neglected subject. It has not received that attention which it richly deserves either at the hands of the public or of the Government. The only

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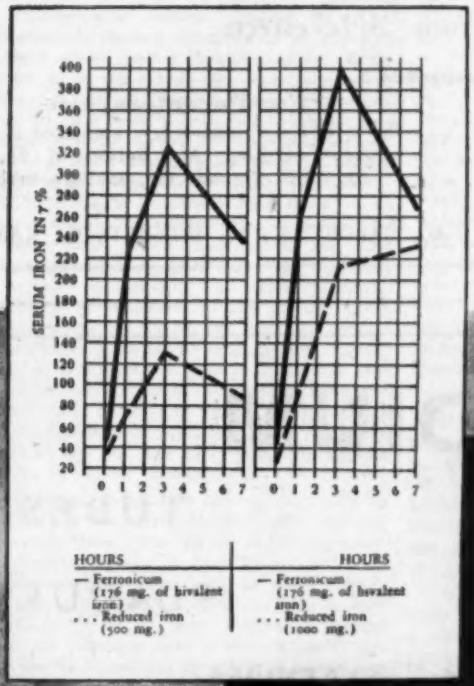

The graph shows the better absorption of Ferronicum as compared to reduced iron. Small oral doses of Ferronicum increase the serum iron level far more than large doses of reduced iron (average from 5 patients). (Jasinsky, Schw. Med. Wschr., 80, 59, 1950)

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consideration given to this serious problem of great magnitude is the frequent repetition of two slogans: (1) that there is a dearth of doctors in the country and (2) that qualified doctors do not care to settle down in villages. Some even think that India like United Kingdom or United States should have one doctor for every thousand or two thousand of the population. Unfortunately, they have either not cared to consider the economics of rural medical relief in India or have deliberately ignored it. The per capita income of an Indian is said to be Rs. 225/- whereas the per capita income of a Britisher or an American is many times that of an Indian. Let us consider these propositions in detail.

Is there a real shortage of doctors in India? This question can only be answered if the policy of the Union and State Governments are made known regarding medical relief and public health. As far as known, the Governments are anxious to encourage every system of medicine practised in this country, viz., modern scientific system, Ayurveda, Unani, Siddha, Homœopathy, etc. There cannot be any objection to practising any system of medicine provided the practitioner has obtained the basic qualification of an approved minimum standard of the modern scientific system. If the practising doctors of all the systems are taken into consideration, there is not only no dearth but a superabundance of doctors. On the other hand, there is real shortage if only doctors of modern scientific system are taken into account. In India there are about 60,000 practitioners of modern scientific system, 100,000 registered ayurvedic practitioners, and perhaps an equal number or more of unregistered practitioners, 250,000 homœopathic practitioners as declared by them and probably about 50,000 unani, siddha and other practitioners for a population of 360 million. This works out at one doctor for every 720 persons or less. While speaking of dearth of doctors, no one has cared to find out the stream of applications that pours into the office of the Public Services Commission and what becomes of the large number rejected. It is interesting to note that the Burma Government was allowed to select doctors for Burma service from India and I understand that about 200 doctors were so selected. Many of the travelling representatives of pharmaceutical houses are qualified doctors as they are well paid. Do these indicate shortage of doctors or poverty of doctors?

It is true qualified doctors are not settling down in villages. But, no one has cared to investigate the real reasons. People who have been always living in towns, enjoying all the modern amenities of town life and who have made their fortune are finding fault with the young medical graduates who have just come out of the colleges for not going to the villages. Some are even prepared to compel these young men and women to work in the villages, though compulsion will not work well and though it is against our constitution and the Fundamental Rights by which they swear for their own ends. Further, the World Medical Association has laid down 12 Principles of Social Security at the meeting of its General Assembly in 1948 at Geneva. This document was later presented to the International Conference on Minimum Standards of Social Security in June 1952. One of these principles was "Freedom of the physician to choose the location and type of his practice". In an exploratory note the WMA commented on this Principle as follows:—"Except in time of national emergencies, the medical profession is resolutely opposed to the direction of practising physicians to certain places or to certain types of work. Such direction is an infringement of the liberty of the subject. Negative direction, that is direction by exclusion, is something which may be against the real medical interests of the community in which it operates." Qualified doctors are not settling down in the villages, not because of the absence of modern amenities of town life such as electricity, fully furnished fashionable flats, cinemas, test matches, etc. The reasons are different and fundamental. The first and foremost reason is that the doctor cannot make a decent living in the villages. To be plain, there is no money in the villages. The villagers are becoming poorer and their lands are not yielding as before. Money is short and many villagers are migrating to the towns not to seek modern amenities of life but for a living wage. Even in towns, doctors do not crowd in every one of them, in spite of the modern amenities of life in every one of them. Doctors are found to crowd in such cities and towns where money is flowing as a result of industries, trade and commerce. This is not peculiar to our country. It is the same all the world over, except in Russia where every doctor is fully paid and the medical profession still continues to be the noblest and not a trade. The Russian doctors working in villages are paid 15 to 20 per cent more than their compeers in towns as their work is considered harder. This system is being introduced in West Bengal by its Chief Minister, Hon. Dr. B. C. Roy, the doyen of the medical profession in India. Bearing in mind that the average income of an Indian villager is very small, will a couple of thousand villagers—500 families—who are steeped in ignorance, illiteracy and poverty be able to maintain a qualified doctor and his clinic which means about Rs. 400 to 500 a month? The State Government pleads lack of funds to employ fully paid qualified doctors in the villages, even if they are available. It must also be understood that one doctor for every village or a group of villages of two or three thousand population seems unnecessary and a waste. This has been clearly proved by the working of over a hundred Primary Centres in Madras State. But no one likes to face facts. Most of these doctors are wasting their time for want of work.

The second reason is the absence of the bare necessaries of life for a healthy living in the villages. Emphasis has to be laid that it is not the modern amenities of town life, but the absolute necessaries as a proper dwelling house with safe drinking water, kitchen, bath room and lavatory and a place where provisions and bare necessaries could be purchased. The other reasons are absence of security of life and property, educational facilities for the children, means of approach, transport, etc.

Thus it will be seen that neither qualified doctors are likely to settle down in villages nor the Government is in a position to appoint fully paid doctors in the villages in the near future. Is there any other way by which medical relief can be made available to the villagers at their very doors? This could be achieved by means of well equipped Mobile Hospitals and by Medical Expeditions. These are being already done with success in some parts of the country.

The State has to be divided into a number of regions of about 60 to 70 square miles, considering the number and population of the villages, the roads of approach to them and the area. The Union Government have already started regional demarcations of rural areas in their Community Projects. Each project consists of about 300 villages with a population of about 25-30,000 and covering an area of about 100 square miles. In each region the biggest village or the centre of a group of villages may be selected as the site for a hospital with about 12-30 beds of which a few

will be reserved for maternity cases. These hospitals may be called Regional or Base Hospitals or Primary Centres. Each hospital should have not less than three doctors of whom one shall be a lady doctor. The auxiliary staff should consist of a nurse, 2 midwives, a health visitor, 2 compounders, 2 nursing orderlies and a scavenger with living accommodation for every one of them. A well equipped van or a jeep with a trailor should be stationed in these regional hospitals to be used as Mobile Hospital. The Taluq and District Headquarter hospitals may be taken as the centres for the villages around them. A doctor with a compounder, a health visitor and a nursing orderly with enough medicines and appliances will go in the Mobile Hospital twice a week in rotation visiting all the selected places on the way covering about 12-20 miles and return by another route if possible. Patients who require institutional treatment will be brought in the van and admitted into the regional hospital. On discharge they will be taken back to their villages. The cooperation of the medical practitioners anywhere in the region should be sought for and their services utilised to run the Mobile Hospital with or without an honorarium.

A local committee should tour the whole region and select the halting places for the Mobile Hospital where the patients will be directed to assemble before the arrival of the hospital. A notice board showing the days and hours of attendance of the doctor should be put up at the selected places. Patients living in and around a radius of a mile or two can easily attend. The doctor will examine and treat the patients, dispense medicine for 3 days and proceed to the next halting place. In this way about 30-40 villages can be reached every day halting at five or six places. These places will be visited twice a week. To begin with the Taluq hospitals and any other suitable hospital in the Taluq may be selected as the Regional Hospitals to work out the scheme as an experimental measure. Rural dispensaries and Primary Centres which are not working satisfactorily may be closed and the whole staff transferred to these selected hospitals. Doctors of rural dispensaries may be appointed as fully paid staff. Instead of 100 ever complaining, unwilling, irresponsible rural practitioners getting an honorarium, it is better to have 50 contented, willing, responsible fully paid officers. This is not casting any aspersion on the rural practitioners who are doing a difficult job under trying and difficult circumstances. Thus without much extra expenditure the scheme can be tried.

Vans or jeeps are required to be converted into Mobile Hospitals. There are hundreds of Government lorries, vans and jeeps in some of the Government departments, particularly the Supplies department which has to be closed sooner or later in view of decontrol and non-procurement of foodstuffs. These automobiles can be reconditioned and equipped as Mobile Hospitals.

Medical Expeditions to rural areas is another method of taking medical relief to the villages. Each expedition will consist of two or more vans properly equipped and fitted up and carrying specialists in as many branches of medicine as possible. The specialists will examine and advise the patients, perform ordinary surgical operations and recommend complicated cases for admission into hospitals. These expeditions will camp at selected places for two or three days after giving due notice to all the villages in the vicinity. This is in the line of the eye camps. An expedition can tour for a couple of months in summer. The personnel can be drawn from the teaching hospitals and being vacation time, senior medical students can accompany them which will be a training ground for them in rural medical practice.

The Regional or Base hospitals have to be connected by the phone or telegraph with the Taluq hospital which in turn with the District hospital. Difficult cases which cannot be tackled at the Regional hospitals will be sent to the Taluq hospital and those that cannot be managed at the Taluq hospital to the District hospital. In either case the concerned hospital will be informed of the nature of the case being sent so that the doctors may be prepared to meet any emergency on arrival of the patient.

A regular ambulance service has to be organised for every district. There are a number of ambulances in every district but controlled by different agencies. All these may be brought under one control or the controlling authorities be requested to make the ambulance available immediately on request without wasting time on formalities.

Thus it will be seen that medical relief can be taken to the very doors of the villagers with the available qualified doctors in the country. In almost every district there are not less than 200 to 250 doctors and the required number for this scheme can be easily found. Hence, there is no necessity to manufacture practitioners of a low standard who may or may not go to the villages. The L.I.M.'s who were intended for the villages have mostly settled down in towns. The money required for the training of low standard doctors can be used for establishing the already sanctioned medical colleges. During the transition period more students can be admitted into the existing medical colleges as recommended by the Medical Council of India. I am, etc.,

64, Venkitaswami Naidu Rd.,
R. S. Puram, Coimbatore.

V. GOVINDAN NAIR,
M.R.C.P., F.R.F.P.S.

FEE SCALES FOR INSURANCE EXAMINATION

SIR,—I find from the proceedings of the Working Committee of the I. M. A. published in the December number of the J. I. M. A. that the Association is trying to come to an understanding with the Life Assurance Association on the scale of fees and had tentatively suggested a scale ranging from Rs. 8 to Rs. 16 according to the sum assured.

In this connection I would point out that labour involved and the responsibility of the doctor is the same for the examination of the client irrespective of the amount assured. I have been examining cases abroad for various insurance companies and the practice there is to pay the doctor one fee, usually £1/1/- for each examination irrespective of the amount assured. I therefore suggest that the fees be fixed at one rate, preferably Rs. 16 for all examinations.

I also find, from my experience of a few cases in India, that the insurance companies are very mean in respect of payments of these fees. They send a receipt to be previously signed and returned and then they send the fees *less M.O. commission*. The fee of the doctor is to be paid where he conducted the examination and not in Bombay or Calcutta where the head office is.

The standard of the medical profession and its dignity in its dealings with these companies depend upon the stand our profession as a whole takes in this matter. I hope the Association will take it up suitably and in keeping with the dignity and self-respect of the profession. I am, etc.

Ootacamund,

A. D. SAGAYAM.

REVIEWS

THE PRINCIPLES AND PRACTICE OF MEDICINE: A Text Book for Students and Doctors—By L. S. P. Davidson, B.A., M.D., F.R.C.P. (ED.). F.R.C.P. (LOND.), M.D. (OSLO) and the Staff and the department of Medicine and associated clinical units of the Royal Infirmary, Edinburgh, E. & S. Livingstone, Ltd., Edinburgh & London, 1952. 22 cm by 14 cm. Pp. 919. Price 1-12s. 6d.

This text book of medicine may be regarded as a companion volume to the text book" of medical treatment of which the author (of the book under review) is a joint editor. It is difficult to decide what to include and what to leave out in a text book of medicine meant essentially for undergraduate students. The author has been successful in making a judicious selection of matter and presenting a book of comfortable volume. The modern text books of medicine in an attempt to include everything are often of such unwieldy volume that a student preparing for examination cannot but feel embarrassed.

The different chapters begin with introductory remarks on anatomy and physiology of the particular system which help in understanding the different diseased conditions better. The book is written lucidly and is uptodate and pleasant to read.

A few remarks may be made without in any way minimising the real worth of the book. The author has included only malaria and amœbic dysentery under tropical diseases and has remarked "A text book on tropical medicine should be consulted for information....." For students of this part of the world, this will make the situation rather difficult. The pathology portion of the more important diseases if discussed a bit more in details would be more helpful. Inspite of these minor criticisms the book is sure to be liked by students specially preparing for their examination particularly because of its manageable size.

A COURSE IN PRACTICAL THERAPEUTICS. By Martin Emil Rehfuss, M.D., F.A.C.P., Alison Howe Price, A.B., M.D., Second Edition, Bailliere, Tindall & Cox, London, 1951, 28 cm. by 22 cm. Pp. xxviii+950, 96 plates. Price 114 s. net.

It is a difficult task to make a detailed review of a book of 950 pages with a surface area about two times that of an average book. A general survey is only possible.

The book has been divided in four sections. I. General therapeutic principles. II. Symptomatic therapy. III. Specific disorders. IV. Special treatment.

The section on general principles also includes a chapter on prescription writing which wil be of great help to general practitioners. The art of prescription writing is being neglected because as the authors remarked "many are not familiar with the potentialities".

The section on symptomatic therapy also will prove to be of great practical help to the practitioners, as symptomatic relief forms an important part of medical treatment, though all attempts must be made to arrive at a diagnosis for a more rational line of treatment. Every physician is called upon almost daily to exercise his knowledge in symptomatic therapy which certainly "does not preclude accurate diagnosis" and appropriate therapy.

The authors have adopted a very sound plan of a schematic method of portraying each step in the treatment of disease, which enables the reader to form an idea within a short time of the more important causes and the general principles of treatment of a symptom or a disease. There are numerous such schematic representations all through the book. This has added much to the usefulness of the book.

In section III are taken the systematic disorders with detailed descriptions of their treatment, the arrangement being excellent and the information uptodate. Subjects like oxygen therapy, radiation therapy, physical medicine, medical rehabilitation have been taken up in section IV avoiding unnecessary details.

Owing to the massive size and rather heavy weight of the book it is a bit difficult to handle the volume. The binding of the volume sent for review might have been defective as already some of the pages were loose (Pp. 633-638). This treatise on "Practical Therapeutics" can be strongly recommended as a reference book of treatment for all practising physicians and the authors deserve congratulation for presenting such a useful volume to the medical profession.

BEDSIDE DIAGNOSIS—By Charles Seward, M.D., F.R.C.P. (EDIN.), Published by E. & S. Livingstone Ltd., Edinburgh and London. Second Edition, 1952, Pp. xvi & 380. Price 17s. 6d. net; registered postage 1s. 2d.

It is wellknown that a patient seeks medical help complaining of some symptoms or for the relief of certain troubles. The first difficulty of the practitioner and much more of the medical student, at this stage, is to arrive at a tentative diagnosis after a careful examination of the patient. The text books on Medicine do not help him much – at this stage, for they contain systematic description of diseases which almost presupposes a diagnosis already arrived at. The present book is intended to help the medical student and the doctor to tide over this initial difficulty. The first edition of the book was published in 1949, reprinted in 1950 and it now appears in its second edition. This partly speaks of the popular reception to this comparatively new book. The subject matter has been dealt with in 22 convenient chapters, well presented with suitable headings and subheadings for easy grasp by the beginner. A diagram opposite the beginning of a chapter serves to explain the points in further detail. The size, volume, binding, paper and printing are all conducive to easy reading and the book should serve a useful purpose with those for whom it is intended.

DIESASES OF THE CARDIOVASCULER SYSTEM—By S. Sen, Calcutta, 1950, pp. 295.

This is a small handbook for students and young practitioners. The arrangement of the text is on the usual orthodox lines and the common cardiovasculer diseases have been dealt with briefly. Discussion on controversial subjects have been purposely left out. Most of the subject matter is dealt with on lines of accepted teaching. There is a small supplement showing reproducton of electrocardiograms in important conditions. There are some omissions in the selection of subject matter. Epidemic dropsy has been completely left out. It is an important condition in the ætiology of heart failure in Bengal. The space devoted to cor pulmonale is very meagre, and its treatment in the different stages are not defined. Thyrotoxicosis is dealt in two different sections. Both could be compacted into one. The general survey of a cardiac patient is left out in the chapter on examination. It is such an important aspect of the physical examination that it could profitably have been given its due place.

The treatment advocated for various conditions are mostly acceptable. There may be some difference of opinion with regard to the use of adrenaline in coronarary thrombosis and peripheral circulatory failure. The danger of administering mersayl to an œdematous patient who has been on digitalis has not been stressed.

On the whole, however, the book is a creditable attempt to present the subject in a concise yet lucid manner.

All will agree with the opinion expressed in the foreword that a beginning must be made with regard to writing of such books for general use, to minimize the dependence on foreign text-books. There is, we believe, sufficient experience and talent in this country to write text books for use by students and general practitioners, if not for specialists, if they will only take the trouble to compile as has been done by Dr. Sen.

CLINICAL THERAPEUTICS—By Prankumar Guha. Published by S. C. Sarkar & Sons, Lt., Calcutta. 1st Edition 1952. pp. 462. Price Rs. 12/-.

The book is an attempt to present the subject of therapeutics so that it may be useful as a book of ready reference to general practitioners. A chapter is devoted to each drug in common use. The official and important non-official preparations are first stated with their doses. Comments about pharmacological action are often mentioned briefly and the practical aspects are dealt with under such headings as mode of administration, and therapeutic application in diseases. After each chapter a short bibliography is added.

There are many instances in which printers devil has been at work. Some valuable prescriptions are incorporated in the book but many will be disinclined to endorse some combinations suggested. Surely the mixture cited in p. 31 consisting of iron, calcium, cod liver oil, and mucilage for certain complications of kala-azar must be very unpalatable. Among the therapeutic indications of opium, euthanasia has been included. It would have been profitable to point out that the procedure is not legal. The newer short courses of emetine hydrochloride of two to three days instead of the customary six or nine for acute amœbic dysentery will probably not be accepted by many clinicians. The advisability of using antimony in kala-azar complicated by pulmonary tuberculosis will also be questioned, even though the author has recommended smaller doses. Under diamidines, however, the author has added a line that this group of drugs has been advocated when such an unfortunate combination of diseases exists. In a book of this nature personal impressions based on a few cases are probably better avoided, unless they are based on a series of strictly controlled observations.

The book has an useful addendum which deals with the more recent discoveries in the therapeutic field such as Cortisone and A.C.T.H. It was probably written after the original text was printed: otherwise it would be difficult to reconcile the condemnation of parenteral iron in the original portion and a chapter devoted to the usefulness of intravenous iron therapy in the addendum.

The method of presentation has advantages but it is not without drawbacks. One is sure to miss any reference to asthma, blackwater fever or epidemic dropsy in the index.

The handy volume is, however, moderately priced and contains much useful and uptodate information.

Received for Review

1. HEALTH FORUM, No. 1, December 1952, Published by Azad Hind Ambulance Service, Netaji Bhawan, 38-2, Elgin Road, Calcutta. 20.
2. INDIGENOUS MEDICINAL SPECIALITIES—By Dr. U. B. Narayanrao, First Edition 1952. Published by Medical Digest, Bombay 4.
3. "CAPTAIN NARENDRANATHER JEEWANKATHA" (in Bengali) by Dr. Amulyaratan Chakravorty, B.SC., M.B., F.R.C.P. (ED.), F.R.S.E. Published by Capt. Narendranath Datta Memorial Committee, September 1952. Price Rs. 4/-.
4. "BALA BIKASH PRATHAM SAAT BARSHA" (in Hindi) by Dr. P. L. Chopra. Published by Nirman Prakashan, 51, Right Town, Jabalpore, M.P., First Edition, 1952. Price Re. 1/4/-.
5. "SANTATI-NIGRAH KIYON AUR KAISEY" (in Hindi) Book on Practical Birth Control by Dr. P. L. Chopra. Introduction by Dr. Jivraj N. Mehta. Published by Nirman Prakashan, 51, Right Town, Jabalpore, M.P., First Edition 1952. Price Re. 1/12/-.
6. INVESTIGATIONS ON THE COMPOSITION AND NUTRITIVE VALUE OF VANASPATI. Published by the Council of Scientific & Industrial Research, New Delhi 1952.
7. NILRATAN SIRCAR MEDICAL SCHOOL AND COLLEGE EX-STUDENTS' ASSOCIATION ANNUAL, 1953. Edited by Drs. J. Mojumdar and S. Roy Chowdhury from 27, Dixon Lane, Calcutta 14.
8. INDIAN DENTAL REVIEW, Special Twenty-fifth Anniversary number, December 1952, Editor—M. K. Patel, Dental Publishing Co., 121, Esplanade Road, Bombay 1.
9. SOUVENIR OF THE 29TH ALL-INDIA MEDICAL CONFERENCE, PATNA, 1952. Published by the "Souvenir Committee"; containing the Welcome and Presidential Addresses, history of Patna, Bihar Provincial Branches and the Indian Medical Association and the names and addresses of members of the Indian Medical Association.

OBITUARY

DR. S. GHOSAL, M.B., D.BACT. (LOND.).

The death occurred of Dr. Susanta Chandra Ghosal, M.B., D.BACT. (LOND.), Professor of Bacteriology and Pathology, School of Tropical Medicine, Calcutta, at his Calcutta residence on the 18th December, 1952. He was 53. The death was sudden, due to a coronary attack.

Well-known in medical circles in Calcutta and outside, Dr. Ghosal carried on important researches on cholera and diphtheria which earned him reputation at home and abroad. He was also a distinguished teacher. Dr. Ghosal was connected with the Journal of the Indian Medical Association as a sectional referee and was a frequent contributor to the medical press. Two papers under his joint authorship appears in this issue of the Journal.

Dr. Ghosal in his earlier years was a sportsman. He had an amiable disposition and was held in high esteem by those who came in close contact with him

May his soul rest in peace!

SUPPLEMENT

Journal of the Indian Medical Association

VOL. XXII. NO. 7 CALCUTTA APRIL, 1953

II RAJPUTANA MEDICAL CONFERENCE, JAIPUR

The second annual session of the Rajputana Medical Conference was held at Jaipur on the 5th, 6th and 7th December, 1952. About sixty delegates from the different parts of the State attended the conference. The inauguration ceremony was performed by Shree Ram Kishore Vyas, Health Minister, Government of Rajasthan. Dr. T. S. Tirumurti, the President of the I. M. A. and Dr. S. C. Sen, the General Secretary were among the distinguished guests who attended the function.

Sree Ram Kishoreji Vyas in course of his inaugural address discussed the various health problems confronting the people of the State. He referred to mal-nutrition, tuberculosis, water-supply and guinea worm, leprosy, child welfare and maternity services and so forth. He said "The roll of the medical profession, as I visualise, is not merely "healing" but is also to remind human beings of their birth rights of health and freedom from disease. The doctors have not only to teach in the Medical College and propagate health education but to teach themselves every day so that they are fit to administer to human needs. There are hundreds of our brethren dying to-day of tuberculosis for want of proper treatment and due to lack of monetary resources, while on the other hand we see lakhs of rupees being spent for building new elaborate houses which are not always necessarily wanted, for the purchase of new cars—and for various other amenities which are not strictly essential. There is enough money in the country but unfortunately not enough goodwill".

Dr. S. K. Menon, the chairman of the Reception Committee accorded a hearty welcome to the delegates and guests and gave a picture of the health condition of Rajasthan in the present days.

Dr. T. S. Tirumurti in his speech, emphasised on (1) making the Association stronger by increasing its membership so as to make it the mouth organ of the profession, (2) compulsory military training to doctors for emergencies, (3) planned parenthood, (4) improved medical aid and nutrition to the masses, (5) concentration on preventive medicine.

Dr. S. C. Sen, elucidated the need for the doctors to enrol themselves as members and come in the fold of the I. M. A.

A scientific exhibition was organised, which was also opened by Shree Ram Kishoreji Vyas. The scientific session was also very interesting.

Dr. L. R. Sarin, the president of the conference in course of his address said:

"We are to-day faced with the problem of building up a healthy nation. Most of the people still live in the villages and there is no denying the fact that they are the most neglected from the health point of view. We have to do something to ameliorate their condition and provide medical relief to those areas. One view is that it can be done by producing doctors with three or four years courses, and sending these doctors with lower qualifications to the countryside. But human life being most precious, the State provides rural as well as the urban aid of the same standard. The best way to do this is to provide mobile dispensaries, so that the doctor can treat minor ailments on the spot and transport serious cases to the hospital. To achieve this end we will have to equip our district hospitals better. Laboratory, x-ray facilities, etc., will have to be provided in every district hospital. Rajasthan is fortunate in having eight graded hospitals where specialists are available. The other way of offering relief to villages would be to ask every newly qualified doctor to go and serve the villages for a year before a degree is finally given to him, but this will again mean that raw hands, who have no practical experience, will go to rural areas. So under the present circumstances, the ideal way would be the arrangement of Mobile Dispensaries till such time as the standard of villages is raised and some of the modern amenities are available when doctors would voluntarily settle in villages as well. Even more essential than this is the raising of the standard of living in villages as most of the village people suffer from nutritional defects. Their vitality is lower and they fall easy victims to all sorts of diseases. With the village population the question of prevention is more important.

The other prime need is that the Medical Act of 1952, which has already beeen passed, must be brought into actual working so that all the doctors are registered. No quacks should be allowed to play with human lives. Vaidyas and Homœopaths too should undergo proper training and be registered separately, though in the modern world scientific medicine is the ideal system to follow.

DR. L. R. SARIN, THE PRESIDENT OF THE CONFERENCE

There are no facilities for preventive medicine, as except in a few towns there are no Health Officers. Preventive side must be developed by providing Health Officers in every town

and in the villages too this work should be carried on. The first important task should be to arrange pure water supply in the urban and rural areas. One of the curses in Rajasthan is guinea-worm infection, which is purely due to defective water supply.

Health of school children must be looked after and School Health Officers should be appointed who will examine the school girls and boys twice a year, as most of the ailments can be corrected if detected early. Since children of to-day are going to lead the nation to-morrow, no amount of money and energy in looking after their health should be spared.

There are no proper facilities for training nurses and compounders. Without nurses, medical aid is incomplete as nursing forms an important part of modern medical treatment. So proper training centres should be started in Jaipur, Bikaner, etc. At present there is only one training centre at Jodhpur. Further we must raise the standard of nursing and look upon the profession as the noblest, so that better class of girls may come forward. Their stipends and pay must be improved, and a Nursing Council should be brought into existence.

Tuberculosis, being one of the scourges in our country, Tuberculosis Clinics should be started in different parts of the State and an early diagnosis by means of x-ray, laboratory, etc., must be arranged in every district hospital and these facilities should be open to private practitioners entirely free. Since the State cannot provide beds for all tubercular cases this side ought to be developed.

The Central Pharmacy and Drugs Act must be put in force so that medicines are properly dispensed and spurious drugs are not brought in the market. Nobody has a right to play with human lives by providing spurious drugs and any one found guilty must be severely dealt with.

Regarding Medical Education there should be one standard only and the minimum qualification should be M.B.B.S. I feel that some consideration should be given to day to day work and terminal examinations at the time of the University Examinations. Indian Medical Council has recommended that eye diseases should form part of general surgery from next year and not be separate subject as at present. With all due deferences I must say that I do not agree with this view. Any lowering of the standard of eye training would not be in the interest of the country. I would, therefore, humbly suggest that eye diseases should be treated as up till now and the subject should form an important part of medical training.

Since there are not going to be any more L.M.P.s, condensed course should be started either in S. M. S. College or at Bikaner or Jodhpur.

Food adulteration has become so rampart that one cannot get pure milk, ghee, etc. The matter has received some attention of the Government and the promulgamation of a pure Food Act is under contemplation. The enforcement of this law immediately and most vigorously can only save the situation.

Last year a resolution was passed at the 27th All-India Medical Conference held at Sholapur as follows:—

"In view of the fact that the Constitution of the Republic of India provides for representation of special interest in the Upper Houses of the Central and State Legislatures, this Conference recommends to the Government of India Republic and State Government that adequate representation be given to Medical Profession through Indian Medical Association."

Since there is no Upper House in our State and there are no nominated members in the State Legislature, I would suggest that the Government should co-opt representative of the I. M. A. in all committees or sub-committees set up by Government to frame policies regarding medical and health matters. Similarly a member of the local branch should be nominated on municipal bodies in order to help the municipal administration with regard to medical matters.

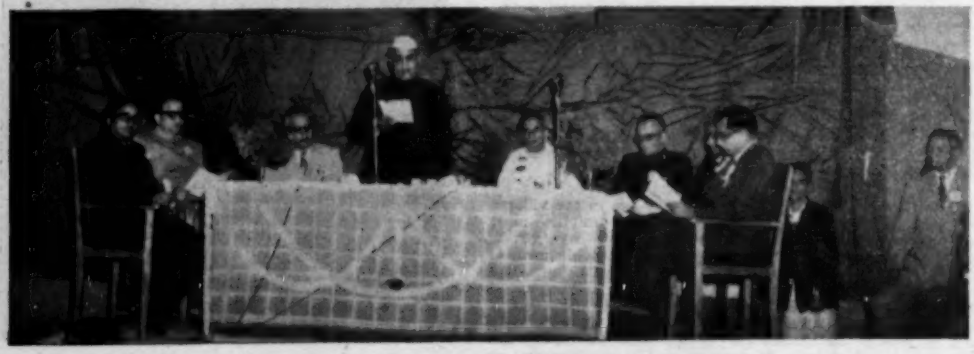
I will further request all the members of the profession to join I.M.A. also so that it may be a fully representative body of the profession. We can make our voice heard only by making that body strong. B.M.A. and A.M.A. yield such an influence in their respective countries that no matter of any importance can be decided by Government without consulting them simply because each and every doctor in those countries is a member of these Associations and the voice of the B.M.A. or the A.M.A. is the voice of the profession.

RESOLUTIONS PASSED AT THE CONFERENCE

1. This Provincial Branch of the Indian Medical Association requests the Rajasthan Government to implement the Medical Act of Rajasthan and expedite the formation of Rajasthan Medical Council.

2. The Rajputana Branch of Indian Medical Association wishes to emphasise the urgent need of training centres for Nurses, Midwives and Compounders at all first class and large second class hospitals and the necessity of a Nursing Council and State Nursing Association for conducting examinations and granting diplomas. There is also a great need for proper propaganda and creation of suitable atmosphere to encourage the educated young girls to take to the noble profession of nursing.

3. The Rajputana Medical Association wishes to bring to the notice of the Governments of Rajasthan and Ajmer-Merwara, the necessity of mobile rural dispensaries for free distribution of essential medical-specific drugs, viz., Anti-



SREE RAM KISHORE VYAS INAUGURATING THE CONFERENCE
LEFT TO RIGHT—DR. TARA SHANKAR MATHUR, HONY. PROV. SECRETARY; COL. R. M. KASLIWAL (OUTGOING PRESIDENT); DR. L. R. SARIN, PRESIDENT; SREE RAM KISHORE VYAS, HEALTH MINISTER; DR. T. S. TIRUMURTI, PRESIDENT, I.M.A.; DR. S. K. MENON, CHAIRMAN, RECEPTION COMMITTEE; DR. S. C. SEN, HONY. GENL. SECRETARY, I.M.A.; DR. R. K. SHARMA, HONY. ORGANISING SECRETARY

malarial and Anti-dysentric drugs—as well as for health survey and health education and propaganda and of providing transport facilities for carrying patients from rural areas to the big hospitals. Rajasthan and Ajmer-Merwara being sparsely-populated in rural areas, mobile units are the correct answer to its rural Health problems.

4. The Members of the Indian Medical Association hereby unanimously desire to bring to the notice of the Rajasthan Government that the new rule of charging house rent from the staff residing within the hospital premises has caused lot of financial strain on the existing low emoluments specially as living within the hospital premises entails extra duties fairly often. It is also brought to the notice of the Government that such house rent is not charged in any of the sister States of the Indian Union. The Association, therefore, requests the Government to reconsider the case of exempting the staff from the payment of house rent.

5. The members of the Rajputana Provincial Branch of Indian Medical Association resolved that in the interest of the public and the profession adequate representation to the Indian Medical Association be given to the committees appointed by the Government of Rajasthan and Ajmer-Merwara to determine policies on Public Health matters; as well as seat may be allotted in the Municipal Council in various town of these States to their respective branches of the I.M.A.

6. Members of the Indian Medical Association resolved that wherever the finances allow, a whole-time fully qualified health officer should be appointed. If impossible part-time services of a government medical officer trained in modern medical science should be obtained as no other system of medicine imparts adequate training in public health work, for the good health administration of the town.

7. Rajputana Provincial Branch of the Indian Medical Association notes with regret that certain essential drugs are being misused to a very great extent and that highly poisonous drugs continue to be used by unqualified persons and sold without restrictions all over the States of Rajasthan and Ajmer-Merwara. This Association recommends to the Governments of Rajasthan and Ajmer-Merwara that these drugs be available only on the prescription of the registered medical practitioner of modern medicine and urges these Governments to immediately implement the Drug and Pharmacy Acts.

8. This meeting of the Rajputana Provincial Branch of the Indian Medical Association requests the Government of Rajasthan and Ajmer-Merwara that in all committeees—government, semi-government or municipality, which deal with health matters there should be a representative of the Indian Medical Association, as the presence of a qualified medical practitioner on these committees will be of tremendous value.

9. Whereas as a result of the efforts of the parent body of the Indian Medical Association certain resident appointments have been made available to its members, this provincial branch of the Indian Medical Association urges the Governments of Rajasthan and Ajmer-Merwara to encourage the selected candidates by freely granting them leave on very lenient terms.

10. In view of the fact that there is a great dearth of Dental Surgeons (qualified) and Dental Colleges in India, the Rajputana Provincial branch of Indian Medical Association requests the Government of Rajasthan to start a diploma or degree course in dental science in the S. M. S. Medical College, Jaipur, as early as possible.

XII BENGAL PROVINCIAL MEDICAL CONFERENCE, HOWRAH

The twelfth session of the Bengal Provincial Conference was held at Howrah on the 6th, 7th and 8th February, 1953. Dr. A. C. Ukil presided. There was a large gathering. Dr. A. D. Mukharji, Deputy Minister, Public Health, West Bengal, inaugurated the conference. In his speech, Dr. Mukharji said that efforts were being made by the Government to rouse health consciousness among the people by providing as many amenities as possible in the rural areas with the available resources. Over 130 health centres with beds ranging from 4 to 50 had been started in villages and schemes to rid the State of malaria had also been taken up. To fight tuberculosis, beds had beeen added and chest clinics were being extended in the congested areas of districts in co-operation with the Bengal Tuberculosis Association. To shape the future health structure of the State he said, co-operation of the medical profession was needed. The Government was working out a scheme to pay medical officers who worked in rural areas under adverse circumstances at least double the salaries of their colleagues in the cities. This should serve as an incentive to doctors to spread out in the villages. Dr. Beni Chandra Datta, Chairman, Reception Committee in his address of welcome said "We are in the threshold of remarkable changes of our great country. The general practitioner is feeling its repercussions. A doctor is primarily trained to serve his patient. It was a human personal relation and obligation. Then came the era of preventive medicine. We have to learn and advise our patients about the art and science of preventive diseases. With the rise of social consciousness of the people and our initiative, we are now witnessing the emergnce of social medicine. The people must realise that health is not a commodity which a doctor can alone deliver. Statesmen, social workers and doctors are common partners in this new venture." He also stressed on the need for physical development of the youth of the country. In this field of activity, the medical profession would have to play a great part.

Sri Kartik Chandra Dutta, Chairman, Howrah Municipality, extended welcome to the delegates and requested the doctors to express their fearless opinion against the inadequate quantity and inferior quality of food in the rationed areas, against the unhealthy congestion in the towns and the high cost of foreign drugs.

Dr. Manilal Bose, the Chairman of the District Board, Howrah, in his welcome speech referred to the high incidence of tuberculosis in the district of Howrah.

PROF. S. N. BOSE,
INAUGURATES THE EXHIBITION

Prof. Satyendra Nath Bose who opened the exhibition of drugs and surgical appliances, said that the exhibition gave them an idea of what the Indian manufacturers produced for the alleviation of human suffering. It was for the experts in the medical profession to see if the exhibits were of high standard and could be reliably used by them.

Dr. A. C. Ukil, the president of the conference in his address said:

"Social conditions react on health and health reacts on social conditions. Socio-economic advance will contribute materially to the reduction of illness and improvement of health, provided the planning and administrative authorities do not violate the principles themselves. Education, housing, improvement of working conditions and environmental sanita-

tion, recreation and social security can be paid for better by the people of urban and industrial areas. I have seen in other countries how the release of the mass energy of the people and their own help *in kind* have stimulated the incentive of the Local Authorities or States concerned.

The general medical profession is the backbone of the whole medical profession and is the guide, philosopher and friend of the family. Members of the profession are, therefore, in a very advantageous position to bring about a social awakening and harness the energies of the people to constructive efforts. The new situation, consequent on the attainment of freedom, needs this, and I hope you will not fail to meet it to the best of your capacity.

Medical Education: Doctors have to serve a social purpose, which function has assumed more importance since the attainment of independence. The wasteful educational methods now pursued by the Medical Colleges are responsible for 80%—85% of failures at some point during the period of study of the students. The University has to take serious note of this, as we cannot afford to lose both time and money at the present stage of the nation's progress. The relationship between the medical colleges and the University is far too formal, partly because the University does not exercise technical direction through grants.

The Indian Medical Council is expected to discharge its statutory responsibility to prescribe and enforce desirable standards of medical education. These standards are not only expected to meet the medical requirements of the country but also to solve various problems in the course of our national planning. At the present moment, not a single medical college, out of about 30, in India has yet been able to satisfy the minimum requirements laid down by the Indian Medical Council. Inspite of this, it passes one's comprehension to learn that attempts are being made to reduce the period of training, to admit 25% more students (with the present shortage of beds, equipment and teachers) and to introduce double-shift training. Having seen the working of the system for 5 years, I am of the opinion that the introduction of the double shift system in our country now in an attempt at the mass production of sub-standard doctors, will be a retrograde step. If we prefer quantity over quality, we invite incompetence, quackery and corruption. I am glad to note that the recent All-India Medical Conference turned down the proposal by a large majority.

The University and the Government should take serious note of the present very unsatisfactory position with regard to the selection of students, teaching and examination, particularly in view of the extra load which each Medical College has to bear for the condensed M.B. students owing to the abolition of the Lake Medical College, a very grave error.

It is too early yet to assess the effect of the introduction of the *New Set Up* at the Calcutta Medical College. The appointment of some whole-time Clinical Professors is a move in the right direction, but without reduction of their routine work, the provision of research facilities and the provision of under-studies and adequate technical assistance it will remain a top-heavy organisation without being able to deliver the goods. Adequate accommodation and boarding arrangements for interns, post-graduate students and research personnel are urgently needed provisions for every Medical College. The provision for field training is an urgent requirement for training in Preventive and Social Medicine.

The new Set Up in the Calcutta Medical College has not affected the *non-clinical departments* where the deficit ratio of teachers to students remains as before. In the departments of Hygiene (now designated Preventive and Social Medicine) and Forensic Medicine, the ratio of teacher to students is 1: 102. There is no whole-time Professor in any of these subjects,—there is no practics—field for participative training in Preventive Medicine and the disproportion between didatic and practical hours remain as bad as ever.

DR. A. C. UKIL, THE PRESIDENT OF THE CONFERENCE

In the *Clinical Section*, before the new Set-Up was introduced, there were 10 *paid* senior Visiting Teachers and 48 *honorary* (senior and junior) Visiting Teachers. With these 58 officers, there were numerous impediments to efficient training of students to which the Association made reference several times. In the new Set-Up, the number of paid officers has been increased to 23, while that of honorary officers has been reduced by 22, thus making a total of 24 officers in place of 58 in the old set up. The posts of honorary junior physicians and surgeons in the general departments have been abolished in the new set-up, thus denying all facilities for training understudies who are needed not only to succeed the seniors on retirement but also to man the various positions required for up to date teaching institutions and for supplying highly efficient staff to mofussil hospitals. As all the Medical Colleges in our State are located in Calcutta, the people of the mofussil are practically denied the opportunity of being treated by highly trained personnel, with the result that the Calcutta hospitals are always overcrowded and many are denied admission. Where is the agency for supplying well-trained surgeons, physicians and obstetricians to the mofussil hospitals? And where is the agency for stimulating research work for solving the urgent medical and public health problems of the country? Most of the Calcutta and mofussil institu-

tions are not equipped for this purpose. Such a serious situation should not be allowed to continue longer. I request the Government and the University authorities to sit together and remove the lag. The matter of high failures at the different University examination should also engage the attention of the University and the various institutions concerned.

Employees State Insurance Scheme: Recently the WHO, at the request of the International Labour Organisation, has laid down certain minimum standards regarding the medical aspects of social security. It states that "the minimum standard requires medical benefit in case of illness to include general practitioner care, specialist care, essential pharmaceutical supplies prescribed by a medical or other qualified practitioner, and hospitalization where necessary. Maternity benefits comprise prenatal, confinement and postnatal care, either by medical practitioners or by qualified midwives, and availability of hospitalisation when necessitated by the circumstances of the case."

The Committee lays down that "health services comprise (*a*) constructive services, including environmental improvements, sound nutrition, etc.; (*b*) personal preventive services, such as immunizations, periodic health examinations, etc.; (*c*) curative services, consisting of diagnosis and treatment of disease and injury; and (*d*) restorative services, meaning measures necessary to help the individual to return to full working and living capacity". The Committee "urged that more emphasis be placed on preventive services and that a medical care programme should provide for services not only for persons with morbid conditions and for pregnant women, but also for persons in presumably good health." It also recommends that top priority in any medical care programme should be given to the provision of the "combination of the general physician and his workshop" and that, as far as practicable, an unification of the administration of medical care and preventive services should be effected.

The Committee also states that "whatever the method for payment of physicians (fee for service, fee per capita or salary), they should be assured continuity of care and a satisfactory doctor-patient relationship". It suggested that part of the funds of a medical care programme should be used for post-graduate education of health personnel and for scientific research, the latter to be the responsibility of "independent councils or institutions which are immune from political or commercial pressures." It also recommends "that access to doctors be simple and that the patient as well as the professional groups be represented in the administrative authority of the programme."

The Employees State Insurance Act in India extends free medical service to industrial workers drawing a wage-income of less than Rs. 400/- a month. The families of these workers are also proposed to be entitled to the service. The Empoyees State Insurance Corporation has proposed the Panel system to the medical profession in West Bengal. Each doctor will be given charge of 2,000 persons within a radius of two miles. The Corporation estimates the sickness rate among industrial employees to vary between 2—3%, a figure which has been found, on enquiry from various industrial establishments, to be far too low. The capitation fee includes remuneration for "(1) such medical treatment, attendance and hospitalisation, etc., as the Insurance Medical Officer is to provide, (2) maintenance of minimum surgical and diagnostic instruments laid down for the purpose, (3) supply of emergency medicines, injections and dressings, (4) use of doctor's clinic, telephone and services of minimum staff, (5) payment in respect of conveyance for domiciliary visits, and (6) payment in respect of the supply of drugs and appliances, and maintenance and supply of proper and sufficient medicines and appliances according to prescribed schedule." The doctors will be on 24 hours' duty.

It will be evident from the above that the scheme in India falls far short of the minimum standards proposed by the WHO. The Corporation estimates that, out of a capitation fee of Rs. 6/- per insured person *per* annum, the doctors will be offered Rs. 4/- for professional services (consultation at the clinics, domiciliary visits including conveyance, and emergency care), Re. 1/- for medicines and dressings, and Re. 1/- for the rent of the doctor's surgery, salary of compounder and other staff, stationery, equipment and telephone charges.

Let us proceed on the basis that the Indian Medical Association wishes to see the scheme succeed in the interest of our industrial workers and would be prepared to help in the functioning of the scheme and try to understand the position. A panel doctor in charge of 2,000 persons will get Rs. 8,000/- per annum (=Rs. 2,000/- p. a. at pre-war level). With a sickness rate of 5—10% among industrial workers, as we estimate it, and the inclusion of domiciliary visits, the work for a doctor is bound to be very heavy. Inadequate remuneration is not conducive to efficient work. I would suggest for your consideration a slab system, whereby you co-operate with the scheme, provided the Corporation agrees to offer proportionately increased fees for a higher incidence of sickness. But the provision of Re. 1/- per worker for medicines (even ordinary) and dressings throughout the year is absurd. It is not likely to serve the purposes of efficient medical care and to satisfy either the doctor or his patient. Under the circumstances, I suggest that Pharmacies and diagnostic facilities (x-ray and laboratory services) be financed and run directly by the Corporation. If doctors are blamed for no fault of theirs, the whole scheme is likely to fail. On the other hand, if the working capacity of the patients is restored by timely and efficient care, the co-operation of the workers will be ensured. On the basis that the doctor will have to attend to each patient at his clinic or the patient's residence at least once a month, the remuneration comes to barely five annas per attendance.

The number of industrial employees in West Bengal is estimated to be about one million, of which 6,50,000 are factory employees excluding mines and tea gardens. Of this number, the Corporation proposes to start with 230,000 employees in Calcutta and Howrah, requiring the services of 165 doctors.

The Drugs Position: I referred to the very unsatisfactory position in India to-day with regard to the supply of drugs and instruments and made various suggestions to rectify the position in my last Presidential Address (1951). The medical profession in every part of India has voiced the same sentiments but the Government seems to be immobile. Even the Planning Commission has not thought it fit to include the urgent reforms in its plans.

It seems that two successive wars have not made us wise. During the last World War, 70% of our drug requirements were met from Indian manufacture, but as soon as the war ended the import gates were opened to all sorts of drugs to the detriment of those which are being manufactured in India. There is no adequate agency in India and her constituent States to-day to assess and control the purity and therapeutic efficacy of drugs manufactured in India, with the result that there is no effective check over the growth of mushroom companies and the sale of spurious drugs.

It is believed that of the drugs and medicaments needed by the profession, about 40% is accounted for by antibiotics, 20% by chemotherapeutic drugs and about 15% by vitamins, hormones and certain other groups. Few of these drugs are being manufactured in India to-day and the chief handicaps to progress are the want of basic chemicals as raw materials, lack of proper equipment and of chemical engineering facilities and the apathy of the Government.

A new danger has arisen in the drug manufacturing firmament of India, viz., the establishment, with Government approval, of factories by big foreign firms who are either importing half-finished raw materials and bottling finished products locally or setting up plants for the large-scale manufacture of antibiotics and proprietory drugs. Unless the Indian drug industry is helped by Government to develop them, it is in danger of being smothered by superior foreign resources and price-cutting. We wish to draw the attention of both the State and Central Government to this serious situation and request them to quickly evolve and operate a plan with the help of the chemists, engineers and the medical profession.

The Indian Medical Association devoted considerable attention to this matter during the last two years. They realise that the profession will gladly use drugs of Indian manufacture if they satisfy the internationally accepted standards of quality and efficacy. The manufacturers are also anxious to co-operate with them, but the Government machinery with regard to quality control is failing. The Central and State Drug Laboratories must assess the composition and action of the drugs and Therapeutic Trial Committees, appointed by the Government, must vouch for their accurate therapeutic action. The Indian Medical Association is prepared to co-operate in this co-operative endeavour. It is a matter of great regret that institutions, like the Calcutta School of Tropical Medicine, are occupied mostly with trials of foreign preparations, a situation which would be unseen in other countries.

In spite of several years' efforts, it has not yet been possible for the Government to compile an Indian Pharmacopoea. In its absence, the bulk of the profession resorts to prescribing foreign proprietary medicines on the strength of statements given in advertisement leaflets—a most unscientific attitude on the part of a scientific profession. In the best interests of the country, this confused state of affairs should not be allowed to last longer.

On account of the high price and deficient supply of certain antibiotic and chemotherapeutic drugs, *spurious drugs* have widely infiltrated into the market, constituting a serious menace to life and public health. The State Government's machinery of an understaffed and underequipped Provincial Drug Laboratory with too few Drug Inspectors, is unable to cope with the situation. Police action largely remains ineffective owing to lacunæ in the Drugs Act and Pharmacy Act. A rigorous control on all fronts is urgently called for.

The Health Status of the State: It is said that "health is a purchaseable commodity". The cost can be considerably lessened if people's co-operation and voluntary service are secured. With the present low revenue and per capita income, we cannot improve public health with the speed and to the extent some of the progressive countries are doing. If we divide the total revenue, on the basis of 1952-53 budget by the population, the maximum per capita expenditure on all items will be Rs. 1,272/- in U. K., Rs. 12/8/- in the Indian Union and Rs. 15/- in West Bengal. Of the total sum of Rs. 15/- per head, West Bengal spent Rs. 2/6/- for medical relief and public health in 1952. This figure stood at Re. 1/2/- in 1946. While we wish to congratulate the Government for the increased allocation, we shall be glad if the figure is raised to at least 25% of the total revenue, or Rs. 3/12/- per head, instead of 13·66% at present, as is done in several progressive countries.

As I pointed out in my 1951 Address, mere extension of Rural Health Centres will not improve matters very much "unless health improvement forms part of an integrated scheme of economic and social welfare". In addition to 148 centres now functioning, I understand it is proposed to add 60 centres every year. I suggest that these be established in the areas covered by the Community Projects as far as possible. These Health Centres should be in organic touch with the community which they are expected to serve. The mobilisation of the patriotic instincts and energies of the people in organisation can contribute considerably to the success of these centres. I am of the opinion that this is not being harnessed to the extent that it should be. In this connection, the West Bengal Health Minister's proposal to increase the emoluments of the whole-time Medical Officers of these centres fourfold, in order to attract the right type of personnel to these areas, is a sound move.

The Government's scheme of controlling *malaria* in rural areas by residual DDT spraying of houses, as indicated in my 1951 Address, in two districts every year is likely to lead to a great reduction of infection and consequent improvement in health status of the people in 7 years' time, but unless DDT can be manufactured here on a large scale the cost will be very high.

Science has contributed in recent years the knowledge and equipment necessary to rid the world of many of its most widely spread communicable diseases. The application of this knowledge is now a question of education, economics, organisation and administration. In other countries, immunization by vaccination and/or improvement of environmental sanitation, particularly in the matter of housing and water supply, have eliminated small-pox, cholera, dysentery and diarrhœa and other diseases, but it is a matter of great regret that the incidence of these diseases has remained in our State almost stationary for many years. We cannot remain complacent by saying that West Bengal has one bed for 1,390 people, one doctor for 2,010 people and one nurse for 8,073 people and one midwife for 8,683 people and that its expenditure per capita on public health is the highest among the Indian States, although credit is due for what has already been done. In spite of what has been said and done, the findings of the Calcutta University Student Welfare Committee, on the basis of a health survey of 5,000 students done during the last two years, that their height, weight and chest girth have gone down, their general health, has generally declined and the incidence of chronic lung diseases has doubled as compared to 1939 figures, should give us cause for serious concern. We should try to find out where the gap in the State's planning programmes is. In finding out this gap, the opinion of the Indian Medical Association may be of considerable assistance if the necessary approach is made for co-operation for a common objective.

I should like to briefly touch on two social diseases—tuberculosis and leprosy. A raising of the standard of living and housing is needed to prevent both, but the specific programmes for protective inoculation, early detection, isolation, treatment and rehabilitation are no less important. Both short term and long term programmes are needed in their case. If we take the minimum target for BCG protection in West Bengal at a million and half infants, children and adolescents,

the figure of 300,000 covered in two years is certainly too low. It is understood that the Government is abolishing the Gobra Leprosy hospital in East Calcutta, with the idea of accommodating patients from the Calcutta and suburban areas to the Leper Colony (500 beds) at Gouripur (Bankura). It is understood the Government thinks that by maintaining one or two clinics and some observation and research beds in the compound of the proposed Infectious Diseases Hospital at Beliaghata, the social and epidemiologic purpose of the problem will be served, we are constrained to point out that it is a mistake. As it has been found in the case of tuberculosis, it is unnecessary and probably a mistake to establish isolation and treatment centres far from the spots where the foci of infection and the social milieu are located. We should like the Government to review the position in the light of these observations and fresh facts elicited.

The Future of the Profession: Of the total number of about 15,500 qualified doctors in West Bengal, a little over 5,000, or one-third, is employed either by the Government and other agencies, and about 10,000 or two-thirds are in independent profession. Of the total number of doctors, 6,500 are in rural areas and 9 000 in urban areas, so that the population theoretically considered to be served by a doctor in rural areas is 2,871, while that served by a doctor in urban areas is 688, a ratio better than U.S.A. and U.K. The real fact is that, while this disparity in distribution has arisen from the agglomeration of doctors in urban areas for obvious economic and social reasons, the economic distress of the people is so much that people in both urban and rural areas are not in a position to pay for the trained medical practitioners. Consequently, economic distress is widely prevalent among the rank and file of the medical profession. In the meantime, apart from removal due to old age and death, 300 medical graduates are being added to the profession every year.

If the Government's anticipations of adding 60—70 Rural Medical Units every year are fulfilled and if the Employees State Insurance Scheme absorbs 200 doctors among 230,000 employees in the Calcutta area for the present, the bulk of the profession will have to depend on private practice for many years to come. Under the circumstances, I suggest that doctors in urban areas develop a Co-operative Medical Care Scheme, more or less on the panel system, for the middle class population among whom economic distress is most marked. The Government, through their Medical or Co-operative Department, should co-operate with such a scheme.

Matters Concerning Ourselves: I congratulate the Bengal Provincial Branch of the Indian Medical Association for having produced a well-considered curriculum of medical studies for students in our Universities. It is now necessary to devote attention to training in the specialities by *Group Committees* to look after the academic and ethical standards and other interests of the different specialities. These Committees may ultimately act as *liaison* between the I.M.A. and the specialists' organisations.

The Rural Medical Conferences introduced last year should be continued and extended. Now that the British Medical Association in India has been amalgamated with the Indian Medical Association, the responsibility for organising the whole medical profession in this country devolves entirely on us. But a handful of men cannot perform a miracle. Out of a total strength of 15,000 qualified doctors in West Bengal, only 2,784 are members of the Association, of whom 1,027 (the same number as in 1951) belong to the Calcutta Branch, 194 are Direct Members and only 1,563 are distributed over 71 branches in the mofussil area.

This is not a creditable performance on the part of the rank and file of our profession. The volume of membership in an Association such as ours gives the necessary strength to render effective service and to be heard in the councils of the people and the Government. In U.S.A. and in U.K. nearly cent per cent of the members of the profession are members of the Association, as such membership gives a dignified status and prestige to them. Because they make a careful study of all problems concerning the profession for the good of the country, the Governments concerned always seek their advice on diverse matters. If we develop a similar outlook and pool our efforts together, we shall be similarly respected in our country. We ought to realise that our strength lies in our unity, I would, therefore, appeal to all qualified members of the profession not only to enrol themselves as members of the Association but to put in their very best for the benefit of the Association and for developing the country in the people's efforts in National Planning.

RESOLUTIONS PASSED AT THE CONFERENCE

1. SCHOOL HEALTH:

(*a*) Realising the extreme nutritional deficiency of average school children in West Bengal and the harmful effect, both physical and mental on them, of long hours of strain and starvation during the school period, this Conference feels that consistent efforts should be made for the improvement of health of school students, and suggests, as an immediate measure, the introduction of a reasonably nutritious compulsory tiffin, free of cost, during school hours, for all school children by the joint efforts of the Board of Secondary Education, Government of West Bengal and the school authorities.

(*b*) This Conference further urges on the Board of Secondary Education and the Government of West Bengal to set up a machinery for compulsory and thorough periodical health examination of all school students and to maintain and utilise the records for the achievement of positive health.

2. HEALTH PROBLEMS: This Conference views with great concern the present deplorable and declining health conditions of the people of the province due to widespread malnutrition owing to food scarcity, unemployment and overcrowding, etc., the utterly inadequately arrangements for medical care provided by the State and the inability of the people to purchase medical help from private medical practitioners with the consequent increasing unemployment of qualified medical men, who are being forced to seek jobs outside India, thus further lowering the medical man-power of the country. This Conference, therefore, strongly urges upon the Government to immediately implement a comprehensive national health scheme to include all people of low-income groups and properly utilise the qualified available medical man-power for their benefit.

Further resolved that while formulating such a scheme, the Indian Medical Association be consulted in order to secure the full co-operation of the qualified medical men in the State.

3. EMPLOYERS' STATE INSURANCE SCHEME:

(*a*) This Conference welcomes the decision of the Employees' State Insurance Corporation and the State Government to implement the Employees' State Insurance scheme in this State in the near future. This Conference feels that in view of the present economic condition and high prices, the scheme should include the dependents of the employees also. This conference while welcoming the Panel System of service for this health insurance scheme, draws the attention of the authorities to the necessity of keeping the Panel open to all registered medical practitioners registered under the Act of 1914, so as to provide the insured persons a free choice of their doctors. Further, to ensure an efficient service this Conference also emphasises the importance of formulating the terms and conditions of the service in joint consultation with the Indian Medical Association.

(*b*) This Conference further urges upon the medical profession to stand united under the Indian Medical Association so as to see that in fixing terms and conditions for the Panel doctors the fundamental rights of registered medical

practitioners are maintained and they may be left free to fulfil their obligations to their patients adequately and in terms of the internationally accepted code of medical ethics.

4. World Peace: This Conference expresses its strong disapproval of the present race for the preparation of atomic, bacteriological and other weapons of destruction and reiterates its view of alarm and indignation, as expressed at the last conference, at the continued threat of another World War, and declares unequivocally that—

(i) medical science must not be used for any purpose other than prevention and cure of diseases and for improving the health of the people and

(ii) that the development of science should be used for and directed to serve the collective welfare of society.

5. Balanced Diet: In view of the serious malnutrition prevalent amongst the people of West Bengal due to shortage of foodstuffs, this Conference directs the Bengal Provincial Council of the Indian Medical Association to appoint a Committee to prepare a national formulary of a minimum balanced diet and urges upon the Government to make an all out effort to provide adequate amounts of such foodstuffs in terms of the formulary.

6. Sub-standard and Spurious Drugs: This Conference registers its strong disapproval of the unnecessary delay on the part of the Central Government in amending the Drugs Act of 1940 as recommended by the Anti-Spurious Drug Committee sponsored by the Indian Medical Association, Calcutta Branch, for putting a stop to the import, sale and manufacture of substandard and spurious drugs, the principle of which has been accepted by the State and Central Governments three months back, and opines that delay in such a vital matter means playing with the lives of hundreds of thousands of helpless sick people which no Government can afford to indulge in.

This Conference further requests the General Secretary of the Indian Medical Association to urge upon the Central Government to promulgate an Ordinance pending the passing of a Bill to the effect by the Parliament.

7. Pay Scale of Medical and Health Officers: This Conference urges upon the Government of West Bengal for revision of Pay Scale of medical and health officers on the lines suggested by the Indian Medical Association.

This Conference further requests the Government to consider the question of sanctioning subsidies to properly qualified medical men to settle down in unrepresented rural areas.

8. Albert Victor Leper Hospital at Gobra: This Conference learns with great concern the State Government's decision of abolishing the Albert Victor Leper Hospital, Gobra, and while it welcomes the Government's move for establishing a Leprosy Colony at Bankura for 500 patients, it is of the opinion that the abolition of the Gobra Hospital will definitely lead to spread of Leprosy in Calcutta vis-a-vis in West Bengal and demands that the Gobra Hospital should under no circumstances be abolished; on the other hand, it should be extended and modernised so as to provide adequate treatment and hospitalisation, when necessary, for about 30,000 Leprosy cases of all types in and around the city of Calcutta and thereby finally eliminate leprosy locally by reducing the incidence rate.

9. Displaced Medical Men: This Conference regrets to note that no practical steps have so far been taken to rehabilitate the displaced medical men from East Pakistan, and urges upon the Government of India and the West Bengal Government to devise suitable ways and means for their rehabilitation.

10. Anti-Venom Sera and Anti-Rabic Vaccines: This Conference feels that anti-venom and anti-rabic vaccines should be made available by the State Government, under proper storage condition, free to medical practitioners in rural areas, through the branches of the Indian Medical Association, so that the people in rural areas not served by any recognised hospitals may get them without undue delay and trouble, and without cost.

11. Post-Graduate Medical Training: Whereas, there being no adequate facilities for post-graduate medical training in this State, a large number of medical men have to go to foreign countries for higher degrees and diplomas, this Conference calls upon the University of Calcutta to establish, without any further delay, a post-graduate medical department under its direct control and responsibility, with adequate financial help from the Government.

Resolved further that the present system of the University affiliating a number of medical institutions in having post-graduate diploma courses, be stopped and such training be taken over entirely by the University. This Conference further urges upon the University to take immediate steps for having D.Phil. degree in different medical subjects and allowing medical graduates to appear at the same.

12. Fee-splitting: This Conference strongly condemns as highly unethical the practice of fee-splitting which unfortunately prevails among certain sections of the medical profession and urges upon all members of the medical profession to strictly observe the International Code of Medical Ethics in their professional life.

13. Medical Education: In view of the fact that most of the Medical Colleges are inadequately equipped, understaffed with underpaid personnel and overcrowded with students, that the attached hospitals are overcrowded, that supervised hospital and field training is inadequate, and that the wasteful educational methods account for a large percentage of failure at Examinations, it is resolved that a Committee be appointed by the Government, University authorities and the Indian Medical Association, to consider the serious situation and to submit recommendations.

14. The Drugs Position: This Conference views with concern the approval of the Central and State Governments to the establishment by foreign drug manufacturing firms of factories in India which often in the garb of joint enterprise, are either importing half finished raw materials with a view to bottle finished products in bulk for local consumption or are setting up plants for the large-scale manufacture of antibiotics with imported intermediary raw materials, which are likely to smother our country's efforts in this direction by superior foreign resources and possible price-cutting. This Conference, therefore, requests the Government to quickly evolve and operate a plan to develop the drug industry in a planned way in order to make India self-sufficient in drugs with the help of Chemists, Engineers and the Medical Profession.

This Conference further requests the Government to stop the import of drugs which are being manufactured in India and to immediately sponsor the manufacture of basic chemicals to help the Indian drug industry.

This Conference further requests the Government to properly organise the Drug Testing Laboratories in order to analyse the various drugs manufactured in or imported into India, and further urges upon the State Government to implement all the provisions of the Drugs Act and the Pharmacy Act and recommends to the medical profession to use ethical drugs of standard quality manufactured in India, in preference to those of foreign manufacture.

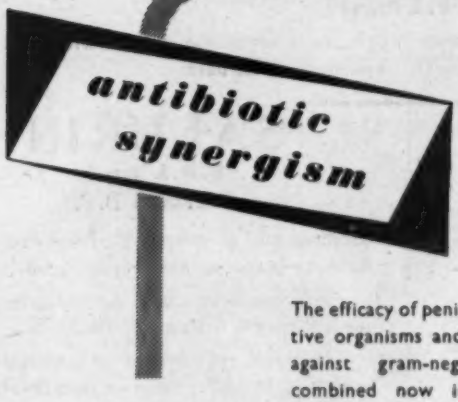
15. Quackery: This Conference requests the Government to take practical measures to stop quack practice with allopathic medicines and at the same time to take measures so that such medicines and medical instruments (even a glass or record syringe and needle) are not sold without a qualified practitioner's prescription in the interest of the public and qualified practitioners.

This Conference requests the Government to adopt suitable legislative measures to stop quack practice in this State.

16. Rural Health Centres: This Conference strongly disapproves the idea of abolishing the indoor department of the rural health centres scheme and, in the interest of the suffering people of rural areas, urges upon the Government of West Bengal not only to continue the same but to improve and extend it.

17. Physical Regeneration: This Conference is convinced of the urgent need for a scheme for the physical regeneration of the people of West Bengal. It urges upon the Government to formulate a proper scheme for the purpose, in consultation with the Bengal Provincial Branch of the Indian Medical Association and to adopt appropriate measures at an early date.

18. Fee for Attendance in Courts: This Conference urges upon the Government of West Bengal to increase the fee for attendance of registered medical practitioners as witness before judicial courts to at least Rs. 16/- per attendance.



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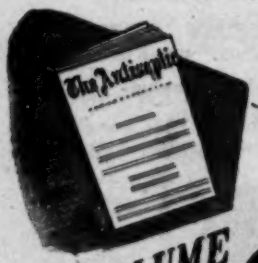

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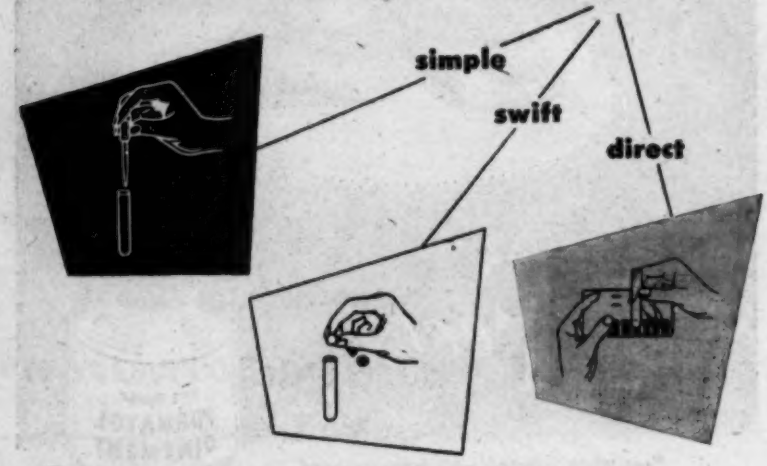

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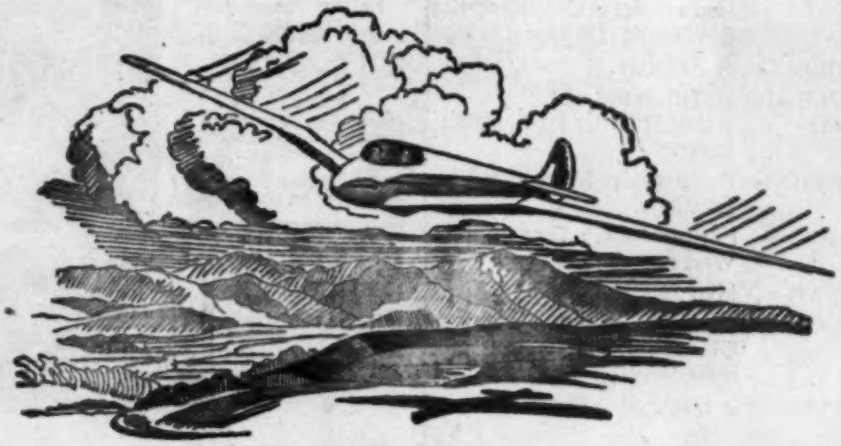

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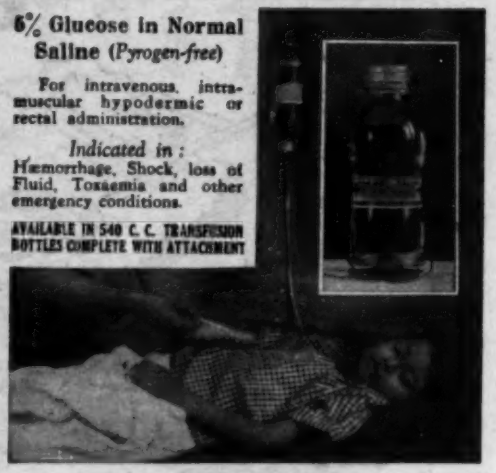

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